MICROWAVE OVEN

CE959G(WHITE) / CE959GGR(GREEN)

CE959GC(RED) / CE959GS(SILVER)

CE959GB(WHITE) / CE959GBGR(GREEN)

CE959GBC(RED) / CE959GBS(SILVER)

CE959GT(WHITE) / CE959GTGR(GREEN)

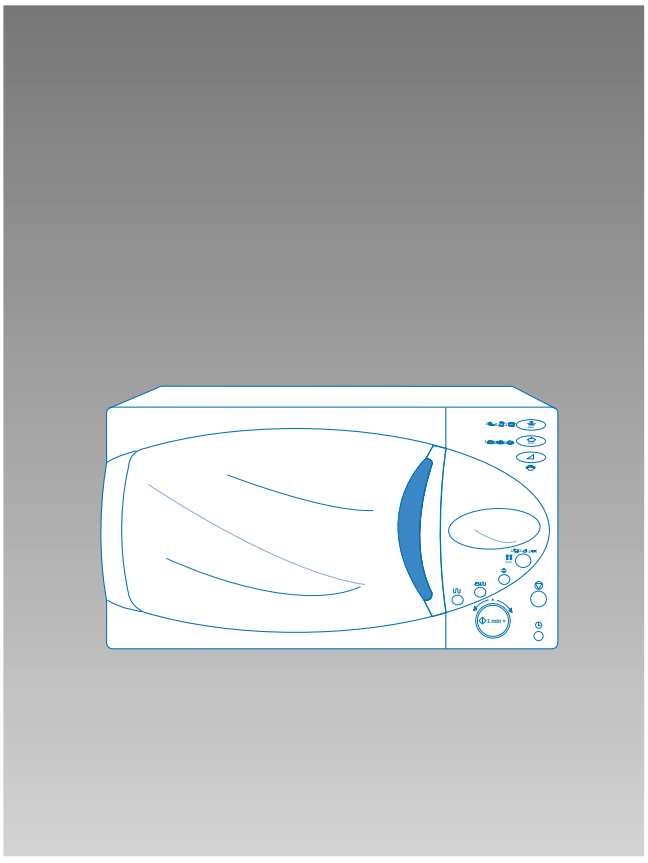
CE959GTC(RED) / CE959GTS(SILVER)

CE959GF(WHITE) / CE959GFGR(GREEN)

CE959GFC(RED) / CE959GFS(SILVER)

SERVICE *Manual*

MICROWAVE OVEN



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PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TOAVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.
(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
  (1) Interlock operation,
  (2) proper door closing,
  (3) seal and sealing surfaces (arcing, wear, and other damage),
  (4) damage to or loosening of hinges and latches,
  (5) evidence of dropping or abuse.
(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(e) A Microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.

1. Precaution

Follow these special safety precautions. Although the microwave oven is completely safe during ordinary use, repair work can be extremely hazardous due to possible exposure to microwave radiation, as well as potentially lethal high voltages and currents.

1-1 Safety precautions (⚠)

1. All repairs should be done in accordance with the procedures described in this manual. This product complies with Federal Performance Standard 21 CFR Subchapter J (DHHS).

2. Microwave emission check should be performed to prior to servicing if the oven is operative.

3. If the oven operates with the door open : Instruct the user not to operate the oven and contact the manufacturer and the center for devices and radiological health immediatly.

4. Notify the Central Service Center if the microwave leakage exceeds 5 mW/cm^2

5. Check all grounds.

6. Do not power the MWO from a "2-prong" AC cord. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.

7. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.

8. Make sure that there are no cabinet openings through which people--particularly children--might insert objects and contact dangerous voltages. Examples: Lamp hole, ventilation slots.

9. Inform the manufacturer of any oven found to have emmission in excess of 5 mW/cm^2, Make repairs to bring the unit into compliance at no cost to owner and try to determine cause.
   Instruct owner not to use oven until it has been brought into compliance.

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10. Service technicians should remove their watches while repairing an MWO.

11. To avoid any possible radiation hazard, replace parts in accordance with the wiring diagram. Also, use only the exact replacements for the following parts: Primary and secondary interlock switches, interlock monitor switch.

12. If the fuse is blown by the Interlock Monitor Switch: Replace all of the following at the same time: Primary and secondary switches, as well as the Interlock Monitor Switch. The correct adjustment of these switches is described elsewhere in this manual. Make sure that the fuse has the correct rating for the particular model being repaired.

13. Design Alteration Warning:
    Use exact replacement parts only, i.e., only those that are specified in the drawings and parts lists of this manual. This is especially important for the Interlock switches, described above. Never alter or add to the mechanical or electrical design of the MWO. Any design changes or additions will void the manufacturer's warranty.10.Always unplug the unit's AC power cord from the AC power source before attempting to remove or reinstall any component or assembly.

14. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

15. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs). Examples include integrated circuits and field-effect transistors.

    Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground.

16. Always connect a test instrument's ground lead to the instrument chassis ground *before* connecting the positive lead; always remove the instrument's ground lead last.

1-2 Special Servicing Precautions (Continued)

17. When checking the continuity of the switches or transformer, always make sure that the power is OFF, and one of the lead wires is disconnected.
18. Components that are critical for safety are indicated in the circuit diagram by shading, ⚠ or ⚠.
19. Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-3 Special High Voltage Precautions

1. High Voltage Warning
   Do not attempt to measureany of the high voltages--this includes the filament voltage of the magnetron. High voltage is present during any cook cycle.

   Before touching any components or wiring, always unplug the oven and discharge the high voltage capacitor (See Figure 1-1)

2. The high-voltage capacitor remains charged about 30 seconds after disconnection. Short the negative terminal of the high-voltage capacitor to the oven chassis. (Use a screwdriver.)

3. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

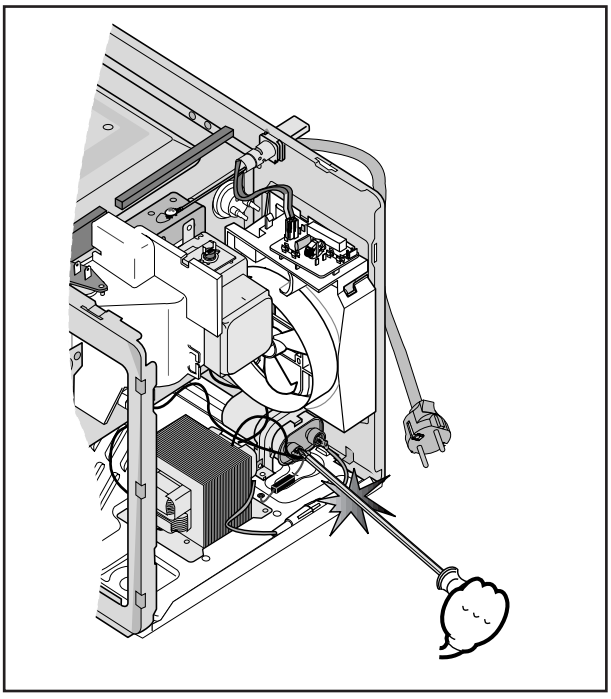
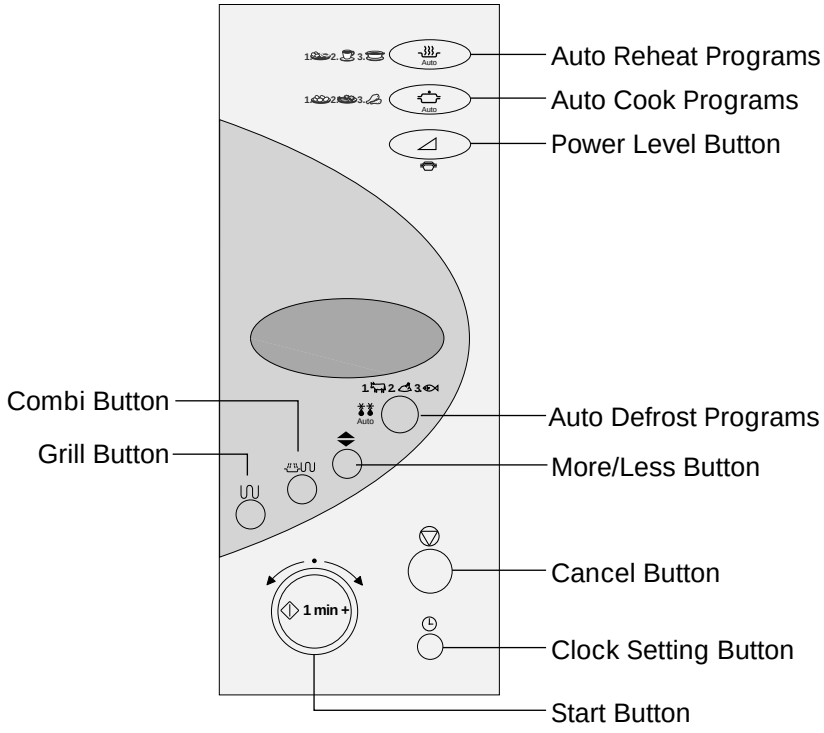


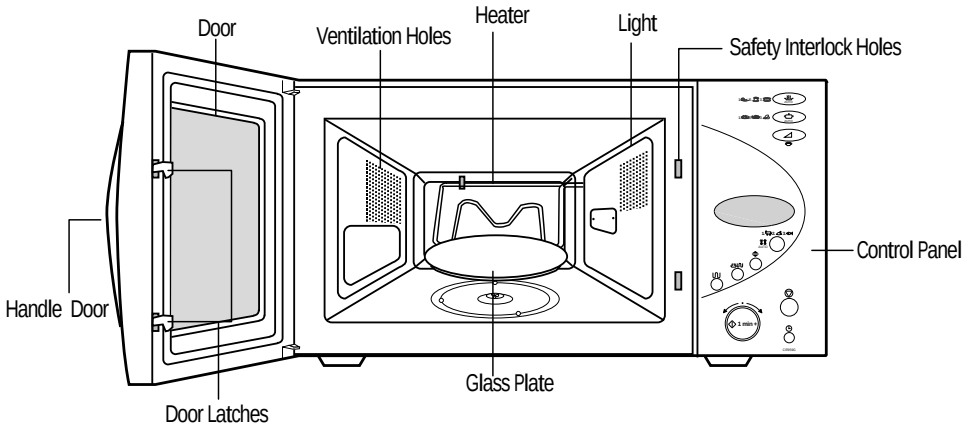
Fig. 1-1. Discharging the High Voltage Capacitor

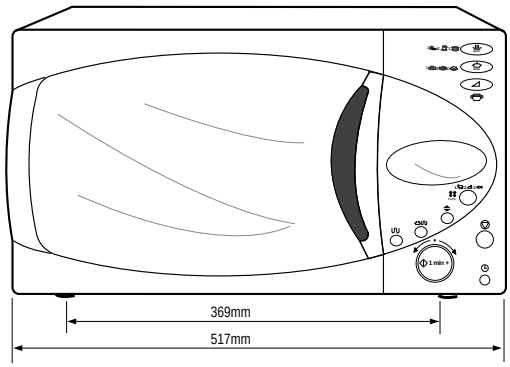
3. Operating Instructions

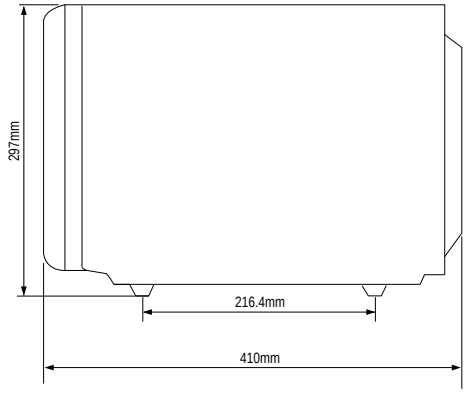
3-1 Control Panel



3-2 Features & External Views







4. Disassembly and Reassembly

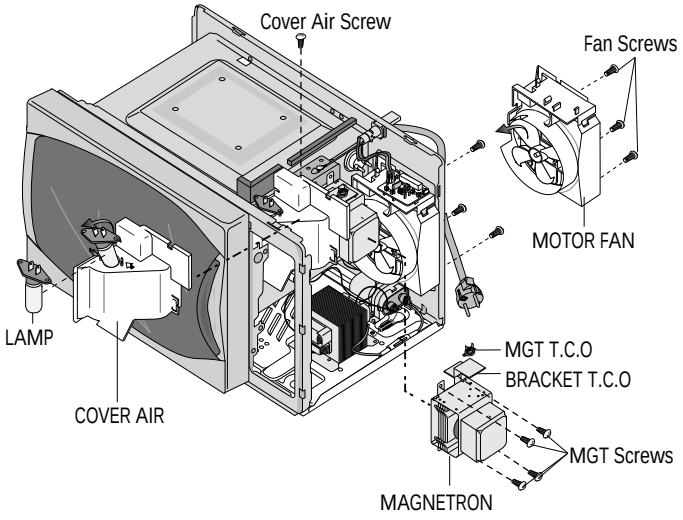
4-1 Replacement of Magnetron, Motor Assembly and Lamp

Remove the magnetron including the shield case, permanent magnet, choke coils and capacitors (all of which are contained in one assembly).

1. Disconnect all lead wires from the magnetron and lamp.
2. Remove the bracket mounting.
3. Remove the magnetron supporter
4. Remove the air cover.
5. Remove screws securing the magnetron to the wave guide.
6. Take out the magnetron very carefully.
7. Remove screws from the back panel.
8. Remove the assy noise filter.
9. Take out the fan motor.
10. Remove the oven lamp by pulling out from hole of air cover carefully.

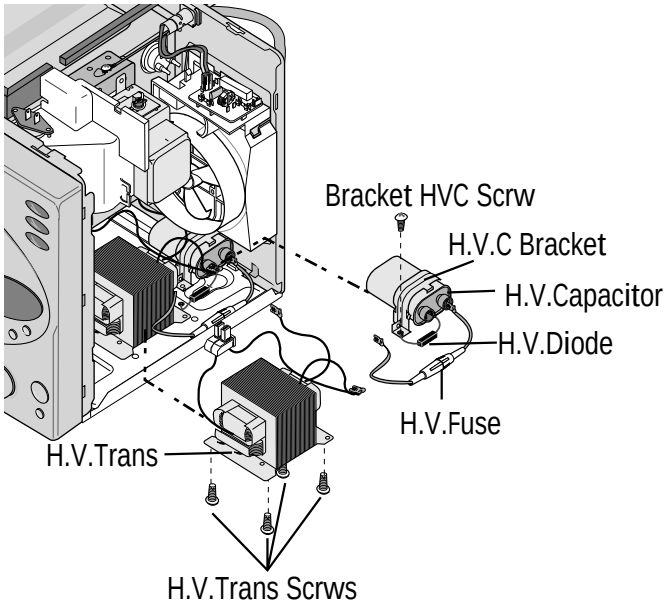
. NOTE1: When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may be damaged.

NOTE2: When replacing the magnetron, be sure to remount the magnetron gasket in the correct position and make sure the gasket is in good condition.



4-2 Replacement of High Voltage Transformer

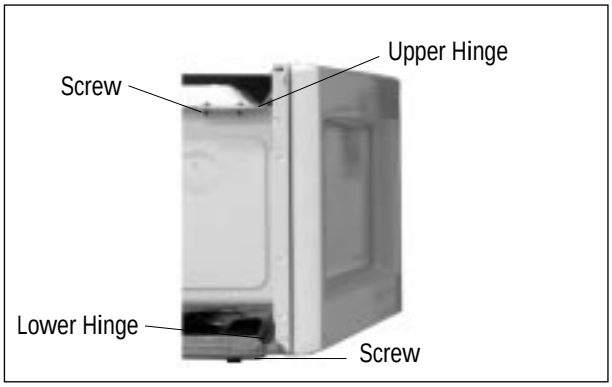
1. Discharge the high voltage capacitor.
2. Disconnect all the leads.
3. Remove the mounting bolts.
4. Reconnect the leads correctly and firmly.



4-3 Replacement of Door Assembly

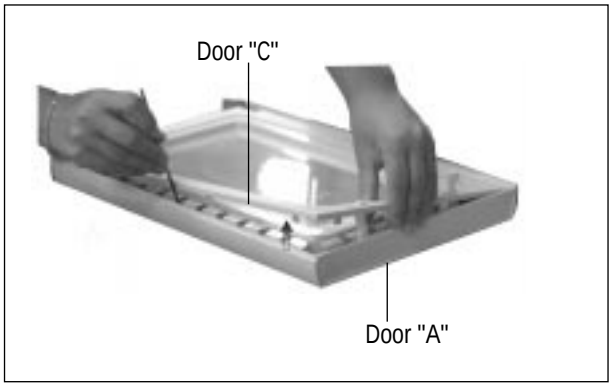
4-3-1 Removal of Door Assembly

Remove screws securing the upper hinge and lower hinge. Then remove the door assembly.



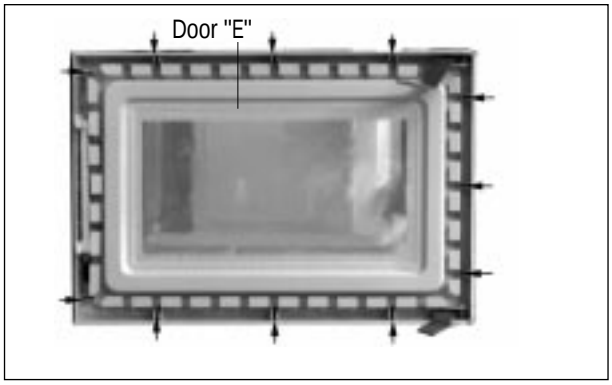
4-3-2 Removal of Door "C"

Insert flat screwdriver into the gap between Door "A" and Door "C" to remove Door "C". Be careful when handling Door "C" because it is fragile.



4-3-3 Removal of Door "E"

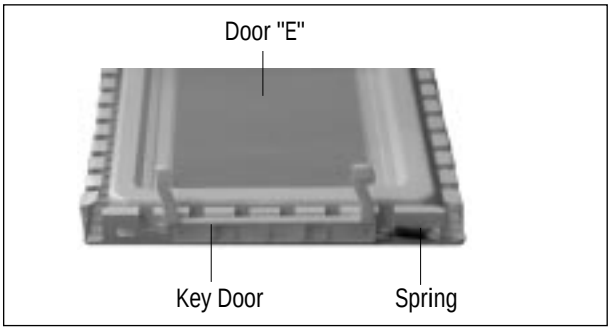
Following the procedure as shown in the figure, insert and bend a thin metal plate between Door "E" and Door "A" until you hear the 'tick' sound.



1. Insertion depth of the thin metal plate should be 0.5mm or less.

4-3-4 Removal of Key Door & Spring

Remove pin hinge from Door "E"
Detach spring from Door "E" and key door.



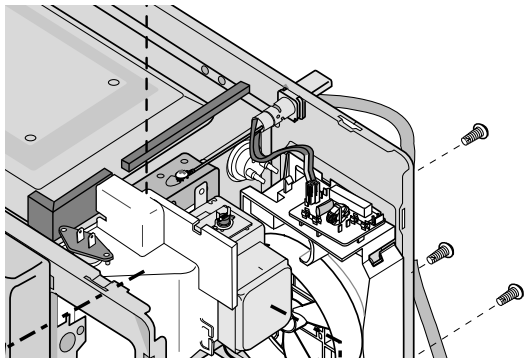
4-3-5 Reassembly Test

After replacement of the defective component parts of the door, reassemble it and follow the instructions below for proper installation and adjustment so as to prevent an excessive microwave leakage.

1. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
2. Adjust so that the door has no play between the inner door surface and oven front surface. If the door assembly is not mounted properly, microwave energy may leak from the space between the door and oven.
3. Do the microwave leakage test.

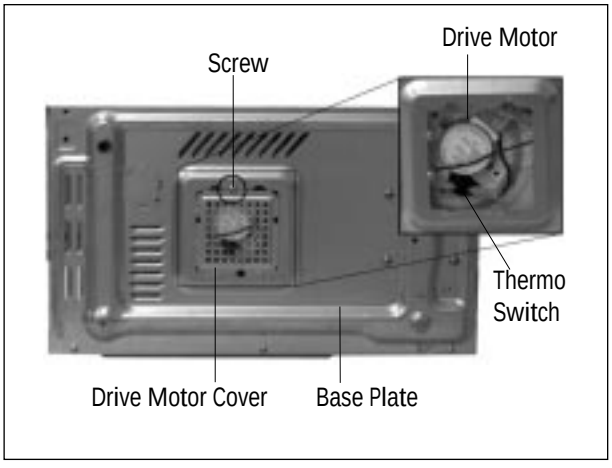
4-4 Replacement of Fuse

1. Disconnect the oven from the power source.
2. Remove the 10A fuse in the Noise filter.
3. When replacing the 10A fuse, be sure to use an exact replacement part. If new 10A fuse blows out again after replacement, check the primary interlock switch, door sensing switch and interlock monitor switch.
4. When the above three switches operate properly, check if any other part such as the control circuit board, blower motor or high voltage transformer is defective.



4-5 Replacement of Drive Motor

1. Take out the glass tray and guide roller from the cavity.
2. Turn the oven upside down to replace the drive motor.
3. Remove a screw securing the drive motor cover.
4. Disconnect all the lead wires from the drive motor.
5. Remove screws securing the drive motor to the cavity.
6. Remove the drive motor and coupler.
7. When replacing the drive motor, be sure to remount it in the correct position with the coupler.
8. Connect all the leads to the drive motor.
9. Screw the drive motor cover to the base plate with a screw driver.



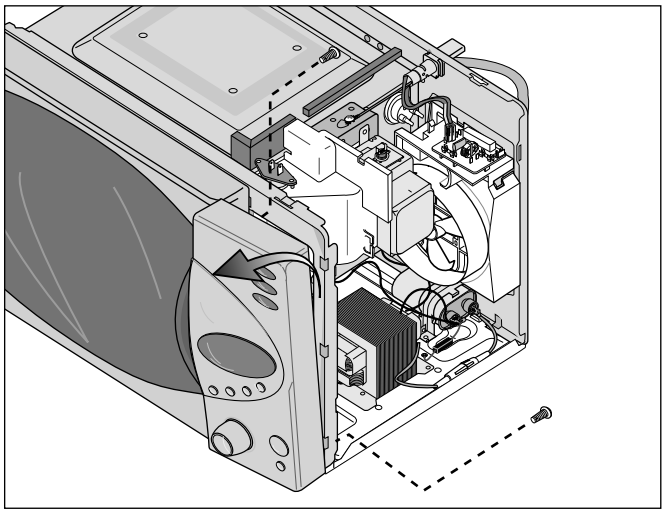
4-6 Replacement of Control Circuit Board

4-6-1 Removal of Control Box Assembly

1. Be sure to ground any static electric charge in your body and never touch the control circuit.

2. Disconnect the connectors from the control circuit board.

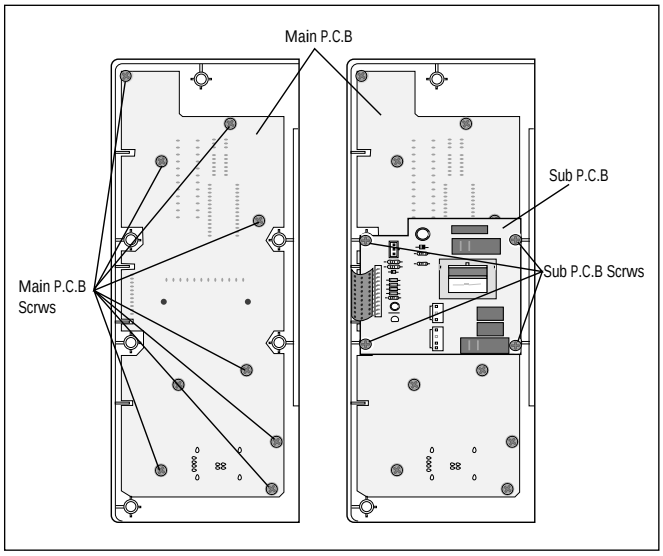
3. Remove screws securing the control box assembly.



4-6-2 Removal of P.C.B Assembly

1. Remove screws securing the control circuit board.

2. Lift up the control circuit board from the Ass'y control box.



5. Alignment and Adjustments

PRECAUTION

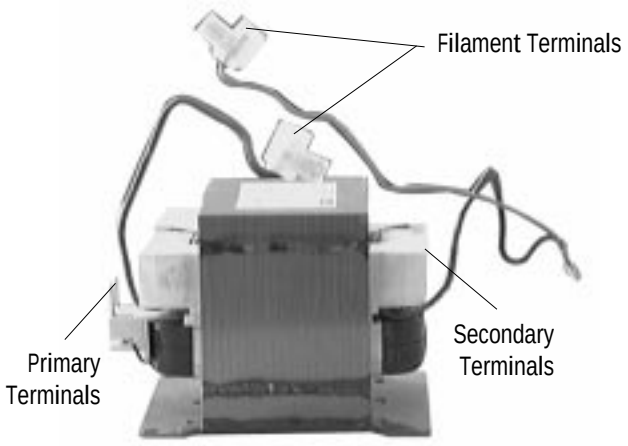
1. High voltage is present at the high voltage terminals during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

5-1 High Voltage Transformer

1. Remove connectors from the transformer terminals and check continuity.
2. Normal resistance readings are as follows:

Secondary	90.0Ω ± 10%
Filament	Shows Continuity
Primary	1.45Ω ± 10%

(Room temperature = 20°C)



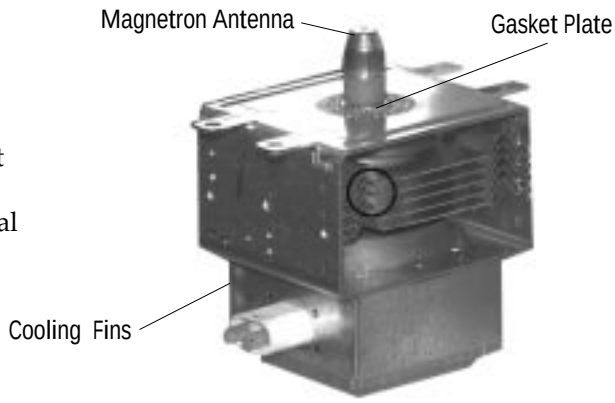
5-2 Low Voltage Transformer

1. The low voltage transformer is located on the control circuit board.
2. Remove the low voltage transformer from the PCB Ass'y and check continuity.
3. Normal resistor reading is shown in the table.

Terminals	Resistance
1~2(Input)	1280Ω
4~5(Output17V)	18.9Ω
7~8(Output2.9V)	3.7Ω

5-3 Magnetron

1. Continuity checks can indicate only an open filament or a shorted magnetron. To diagnose an open filament or shorted magnetron :
2. Isolate the magnetron from the circuit by disconnecting its leads.
3. A continuity check across the magnetron filament terminals should indicate one ohm or less.
4. A continuity check between each filament terminal and magnetron case should read open.



5-4 High Voltage Capacitor

1. Check continuity of the capacitor with the meter set at the highest resistance scale.
2. Once the capacitor is charged, a normal capacitor shows continuity for a short time, and then indicates 9MΩ.
3. A shorted capacitor will show continuous continuity.
4. An open capacitor will show constant 9MΩ.
5. Resistance between each terminal and chassis should read infinite.

5-5 High Voltage Diode

1. Isolate the diode from the circuit by disconnecting its leads.
2. With the ohm-meter set at the highest resistance scale, measure across the diode terminals. Reverse the meter leads and read the resistance. A meter with 6V, 9V or higher voltage batteries should be used to check the front-to back resistance of the diode (otherwise an infinite resistance may be read in both directions). The resistance of a normal diode will be infinite in one direction and several hundred KΩ in the other direction.

5-6 Main Relay and Power Control Relay

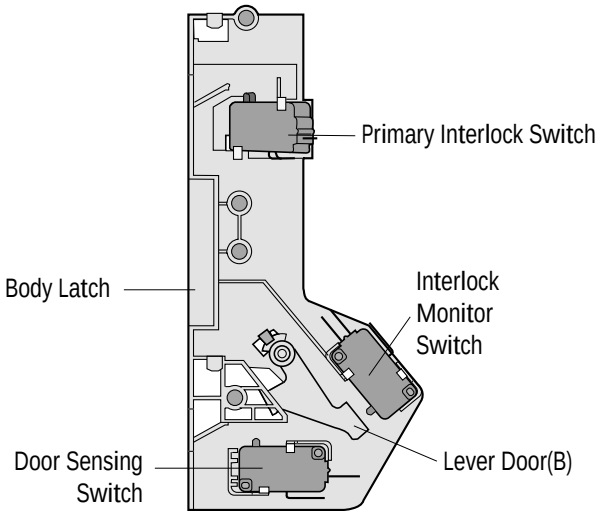
1. The relays are located on the PCB Ass'y. Isolate them from the main circuit by disconnecting the leads.
2. Operate the microwave oven with a water load in the oven. Set the power level set to high.
3. Check continuity between terminals of the relays after the start pad is pressed.

5-7 Adjustment of Primary Switch, Door Sensing Switch and Monitor Switch

Precaution

For continued protection against radiation hazard, replace parts in accordance with the wiring diagram and be sure to use the correct part number for the following switches: Primary and door sensing switches, and the interlock monitor switch (replace all together). Then follow the adjustment procedures below. After repair and adjustment, be sure to check the continuity of all interlock switches and the interlock monitor switch.

1. When mounting Primary switch and Interlock Monitor switch to Latch Body, consult the figure.
2. No specific adjustment during installation of Primary switch and Monitor switch to the latch body is necessary.
3. When mounting the Latch Body to the oven assembly, adjust the Latch Body by moving it so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the Latch Body to the oven assembly.
4. Reconnect to Monitor switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.
5. Confirm that the gap between the switch housing and the switch actuator is no more than 0.5mm when door is closed.



	Door Open	Door Closed
Primary switch	∞	0
Monitor switch (COM-NC)	0	∞
Door Sensing S/W	∞	0

5-8 Output Power of Magnetron

CAUTION
MICROWAVE RADIATION

PERSONNEL SHOULD NOT ALLOW EXPOSURE TO MICROWAVE RADIATION FROM MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

The output power of the magnetron can be measured by performing a water temperature rise test.
Equipment needed :
* Two 1-liter cylindrical borosilicate glass vessel (Outside diameter 190 mm)
* One glass thermometer with mercury column
NOTE: Check line voltage under load. Low voltage will lower the magnetron output. Make all temperature and time tests with accurate equipment.
1. Fill the one liter glass vessel with water.
2. Stir water in glass vessel with thermometer, and record glass vessel's temperature ("T1", 10±1˚C).
3. After moving the water into another glass vessel, place it in the center of the cooking tray. Set the oven to high power and operate for 48seconds exactly. (1.5 seconds included as a holding time of magnetron oscillation:)
4. When heating is finished, stir the water again with the thermometer and measure the temperature ("T2").
5. Subtract T1 from T2. This will give you the water temperature rise. (ΔT)
6. The output power is obtained by the following formula;

$$\text{Output Power} = \frac{4.187 \times 1000 \times \Delta T + 0.88 \times Mc \times (T_2 - T_0)}{46.5}$$

46.5: Heating Time (sec)
4.187 : Coefficient for Water
1000 : Water (cc)
ΔT : Temperature Rise (T2-T1)
Mc : Cylindrical borosilicate glass weight
To : Room temperature.

7. Normal temperature rise for this model is 9˚C to 11˚C at 'HIGH'.
NOTE 1: Variations or errors in the test procedure will cause a variance in the temperature rise. Additional power test should be made if temperature rise is marginal.
NOTE 2: Output power in watts is computed by multiplying the temperature rise (step 5) by a factor of 90 times the of centigrade temperature.

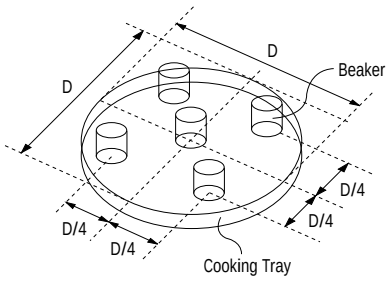
5-9 Microwave Heat Distribution - Heat Evenness

The microwave heat distribution can be checked indirectly by measuring the water temperature rise at certain positions in the oven:

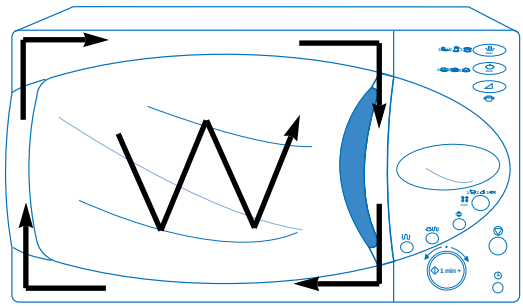
1. Prepare five beakers made of 'Pyrex', having 100 milliliters capacity each.
2. Measure exactly 100milliliters off water load with a measuring cylinder, and pour into each beaker.
3. Measure the temperature of each water load. (Readings shall be taken to the first place of decimals.)
4. Put each beaker in place on the cooking tray as illustrated in figure below. Start heating.
5. After heating for 2 minutes, measure the water temperature in each beaker.
6. Microwave heat distribution rate can be calculated as follows:

$$\text{Heat Distribution} = \frac{\text{Minimum Temperature Rise}}{\text{Maximum Temperature Rise}} \times 100(\%)$$

The result should exceed 65%.



5-10 Procedure for Measurement of Microwave Energy Leakage

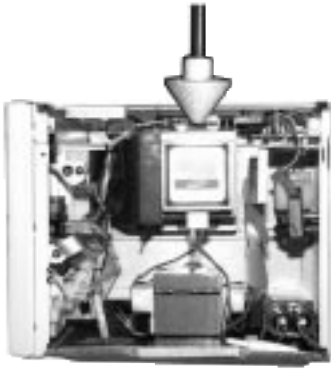


1) Pour 275±15cc of 20±5°C(68±9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
2) Start to operate the oven and measure the leakage by using a microwave energy survey meter.
3) Set survey meter with dual ranges to 2,450MHz.
4) When measuring the leakage, always use the 2 inch spacer cone with the probe. Hold the probe perpendicular to the cabinet door. Place the spacer cone of the probe on the door and/or cabinet door seam and move along the seam, the door viewing window and the exhaust openings moving the probe in a clockwise direction at a rate of 1 inch/sec. If the leakage testing of the cabinet door seam is taken near a corner of the door, keep the probe perpendicular to the areas making sure that the probe end at the base of the cone does not get closer than 2 inches to any metal. If it gets closer than 2 inches, erroneous readings may result.
5) Measured leakage must be less than 4mW/cm^2, after repair or adjustment.

> Maximum allowable leakage is 5mW/cm^2.
> 4mW/cm^2 is used to allow for measurement and meter accuracy

5-11 Check for Microwave Leakage

1. Remove the outer panel.
2. Pour 275±15cc of 20±5°C(68±9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
3. Start the oven at the highest power level.
4. Set survey meter dual ranges to 2,450MHz.
5. Using the survey meter and spacer cone as described above, measure arnear the opening of magnetron, the surface of the air guide and the surface of the wave guide as shown in the following photo.(but avoid the high voltage components.) The neading should be less than 4mW/cm^2.



5-12 Note on Measurement

1) Do not exceed the limited scale.
2) The test probe must be held on the grip of the handle, otherwise a false reading may result when the operator's hand is between the handle and the probe.
3) When high leakage is suspected, do not move the probe horizontally along the oven surface; this may cause damage to the probe.
4) Follow the recommendation of the manufacturer of the microwave energy survey meter.

5-13 Leakage Measuring Procedure

5-13-1 Record keeping and notification after measurement

1) After adjustment and repair of a radiarion preventing device, make a repair record for the measured values, and keep the data.
2) If the radiation leakage is more than 4 mW/cm^2 after determining that all parts are in good condition, functioning properly and the identical parts are replaced as listed in this manual notift that fact to ;

CENTRAL SERVICE CENTER

5-13-2 At least once a year have the microwave energy survey meter checked for accuracy by its manufacturer.

6. Troubleshooting

PRECAUTION

1. CHECK GROUNDING BEFORE CHECKING FOR TROUBLE.
2. BE CAREFUL OF THE HIGH VOLTAGE CIRCUIT.
3. DISCHARGE THE HIGH VOLTAGE CAPACITOR.
4. WHEN CHECKING THE CONTINUITY OF THE SWITCHES OR TRANSFORMER, DISCONNECT ONE LEAD WIRE FROM THESE PARTS AND THEN CHECK CONTINUITY WITHOUT THE POWER SOURCE ON. TO DO OTHERWISE MAY RESULT IN A FALSE READING OR DAMAGE TO YOUR METER.
5. DO NOT TOUCH ANY PART OF THE CIRCUIT OR THE CONTROL CIRCUIT BOARD, SINCE STATIC DISCHARGE MAY DAMAGE IT. ALWAYS TOUCH GROUND WHILE WORKING ON IT TO DISCHARGE ANY STATIC CHARGE BUILT UP.

Please don't mind if the oven works continuously after the cooking over.
Reason : This oven is designed to work without microwaves for 5 min to cool internal electric part after the cooking over. (The "0 " indication flashes.)
Open the door or press any buttons except ◇ 1 min + button to stop the oven.

6-1 Electrical Malfunction

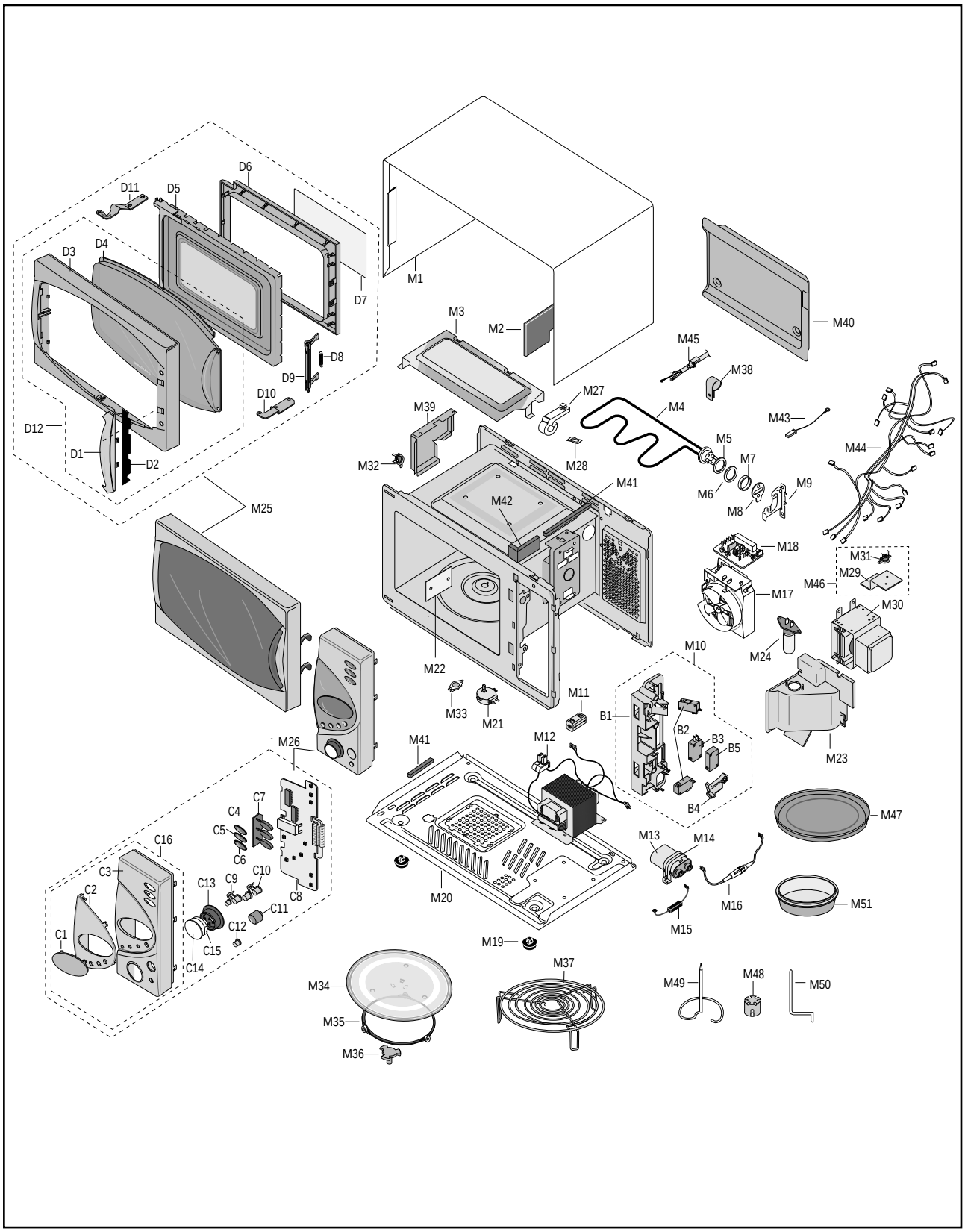
SYMPTOM	CAUSE	CORRECTIONS
Oven is dead. Fuse is OK. No display and no operation at all.	1. Open or loose lead wire harness 2. Open thermal cutout (Magnetron) 3. Open low voltage transformer 4. Defective Ass'y PCB	Check fan motor when thermal cutout is defective. Check Ass'y PCB when LVT is defective.
No display and no operation at all. Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switch (NOTE 1) 3. Defective monitor switch (NOTE1) 4. Shorted HVCapacitor 5. Shorted HVTransformer (NOTE2)	Check adjustment of primary, interlock monitor, door sensing switch.
	NOTE 1: All of these switches must be replaced at the same time. (refer to adjustment instructions) Check continuity of power relay contacts and if it has continuity, replace power relay also. NOTE 2: When HVTransformer is replaced, check diode and magnetron also.	
Timer starts countdown but no microwave oscillation. (No heat while oven lamp and fan motor turn on.)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to lower output and/or intermittent oscillation. 3. Defective high voltage components H.V.Transformer H.V.Capacitor H.V.Diode,H.V.Fuse Magnetron 4. Open or loose wiring of power relay 5. Defective primary latch switch 6. Defective power relay or Ass'y PCB	Adjust door and latch switches. Check high voltage component according to component test procedure and replace if it is defective. Replace PCB main.

6-1 Electrical Malfunction(continued)

SYMPTOM	CAUSE	CORRECTIONS
Oven can program but timer does not start.	1. Open or loose wiring of door sensing switch 2. Off-alignment of primary interlock 3. Defective ASSY PCB replace PCB MAIN.	Adjust door and interlock switches.
Microwave output is low;. Oven takes longer time to cook food.	1. Decrease in power source voltage. 2. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation) 3. Aging of magnetron	Consult electrician.
Oven does not operate and return to the plugged in mode.	Defective Ass'y PCB	Replace PCB main.
Loud buzzing noise can be heard.	1. Loose fan and fan motor 2. Loose screws on H.V.Transformer 3. Shorted H.V.Diode	Tighten screws of fan motor. Tighten screws of H.V.Transformer. Replace H.V.Diode.
Turntable motor does not rotate.	1. Open or loose wiring of turntable motor. 2. Defective turntable motor.	Check the wire of turntable motor Replace turntable motor.
Oven stops operation during cooking	1. Open or loose wiring of primary interlock switch 2. Operation of thermal cutout(Magnetron)	Adjust door and latch switches.
Sparks	1. Metallic ware or cooking dishes touching on the oven wall. 2. Ceramic ware trimmed with gold or silver powder also causes sparks.	Inform the customer. Do not use any type of cookware with metallic trimming.
Uneven cooking	Uneven intensity of microwave due to its characteristics.	Wrap thinner parts of the food with aluminum foil. Use plastic wrap or cover with a lid. Stir once or twice while cooking foods such as soup, cocoa, or milk.
Noise from the turntable motor when it starts to operate.	Noise may result from the motor.	Replace turntable motor.

7. Exploded Views and Parts List

7-1 Exploded Views



7-2 Main Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
M 1	DE70-30001A	PANEL-OUTER;SECC,T0.6,360,1128,EPOXY-COATI	1	WHITE(CE959G/GT/GB/GF)
M 1	DE70-30001E	PANEL-OUTER;SECC,T0.6,360,1128,W/RED,RE-44	1	RED(CE959G/GT/GB/GF)
M 1	DE70-30001I	PANEL-OUTER;SECC,T0.6,360,1128,DEEP/GRN,MX	1	GREEN(CE959G/GT/GB/GF)
M 1	DE70-30001Z	PANEL-OUTER;SECC,T0.6,360,L1128,SIL,CE959	1	SILVER(CE959G/GT/GB/GF)
M 2	DE63-90035G	CUSHION-RUBBER;DFA20,T2,W190,L100,BLK	1	
M 3	DE61-50017A	BRACKET-UPPER;SECC1,T0.6,340,216	1	
M 4	DE47-70031G	HEATER-GRILL;D6.6,230V1280W,M9G45,SJH	1	
M 5	DE63-20017A	GASKET-HEATER;BRASS,T1.5,OD30.5,ID22.5	1	
M 6	DE60-40009B	WASHER-TEFLON;SLOT,ID22.2,OD28,T1.2,TEFLON	1	
M 7	DE61-50021A	BRACKET-FLANGE;SECC1,T0.8,32,32	1	
M 8	DE61-50347A	BRACKET-EARTH;BSS2-A,T1.0,W35,L43,MBGF45	1	
M 9	DE61-50027B	BRACKET-HEATER;SECC,T1.0,W51,L55,CE945GF	1	
M 10	DE93-20020A	ASSY BODY LATCH;RE-43B/90B	1	
M 11	DE73-90027A	FERRITE-CORE;NI-ZN,T13.8,W21.0,L28.0,BNF-14	1	
M 12	DE26-10100A	TRANS-H.V;SHV-945EG1,230V,2280V/3.15V,50	1	⚠
M 13	2501-001030	C-OIL;1.1uF,2100V,BK,35x54x95,20mm	1	
M 14	DE61-50106A	BRACKET-HVC;SECC,T0.8,W31,L125.8	1	
M 15	DE59-40001A	DIODE-H.V;HVR-1X-32B-12	1	
M 16	DE91-70061A	ASSY-H.V.FUSE;THV060T-0800-H,5KV/0.8A,WHT	1	
M 17	DE31-10156A	MOTOR-FAN;SMF-945EA,230/50,2400,M97G45	1	
M 18	DE91-40095A	ASSY NOISE FILTER;SN-E10D(N),250V,10A,2ND-WD-TYP	1	
M 19	DE61-40017A	FOOT;PP(A353),BLK,MW5630T	2	
M 20	DE80-10001A	BASE-PLATE;SGCC,T0.8,345,565,	1	
M 21	DE31-10154A	MOTOR-DRIVE;M2HJ49ZR02,ST-16,21V,5/6	1	
M 22	DE71-60382A	COVER-CEILING;MICASHEET,T0.5,70,133	1	
M 23	DE71-60016A	COVER-AIR;PP,2,WHT,M945/M245	1	
M 24	4713-001031	LAMP-INCANDESCENT;230V,173mA,40W,ORG,-,-,25x69mm	1	
M 25		ASSY DOOR;CE959G/CE959GT,WHT	1	WHITE(CE959G/GT/GB/GF)
M 25		ASSY DOOR;CE959GC/CE959GTC,RED	1	RED(CE959G/GT/GB/GF)
M 25		ASSY DOOR;CE959GR/CE959GTGR,GRN	1	GREEN(CE959G/GT/GB/GF)
M 25		ASSY DOOR;CE959GS/CE959GTS,SIL	1	SILVER(CE959G/GT/GB/GF)
M 26	DE93-30373R	ASSY CONTROL-BOX;CE959G	1	CE959G (WHITE)
M 26	DE93-30373S	ASSY CONTROL-BOX;CE959GGR	1	CE959GGR (GREEN)
M 26	DE93-30373T	ASSY CONTROL-BOX;CE959GC	1	CE959GC (RED)
M 26	DE93-30373U	ASSY CONTROL-BOX;CE959GS	1	CE959GS (SILVER)
M 26	DE93-30373V	ASSY CONTROL-BOX;CE959GT	1	CE959GT (WHITE)
M 26	DE93-30373W	ASSY CONTROL-BOX;CE959GTGR	1	CE959GTGR (GREEN)
M 26	DE93-30373X	ASSY CONTROL-BOX;CE959GTC	1	CE959GTC (RED)
M 26	DE93-30373Y	ASSY CONTROL-BOX;CE959GTS	1	CE959GTS (SILVER)
M 26	DE93-30546B	ASSY CONTROL-BOX;CE959GB	1	CE959GB (WHITE)
M 26	DE93-30546C	ASSY CONTROL-BOX;CE959GBGR	1	CE959GBGR (GREEN)
M 26	DE93-30546D	ASSY CONTROL-BOX;CE959GBC	1	CE959GBC (RED)
M 26	DE93-30546E	ASSY CONTROL-BOX;CE959GBS	1	CE959GBS (SILVER)
M 26	DE93-30546F	ASSY CONTROL-BOX;CE959GF,FULL-OPTION	1	CE959GF (WHITE)
M 26	DE93-30546G	ASSY CONTROL-BOX;CE959GFGR,FULL-OPTION	1	CE959GFGR (GREEN)
M 26	DE93-30546H	ASSY CONTROL-BOX;CE959GFC,FULL-OPTION	1	CE959GFC (RED)
M 26	DE93-30546J	ASSY CONTROL-BOX;CE959GFS,FULL-OPTION	1	CE959GFS (SILVER)

7-2 Main Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
M 27	DE61-30006A	SUPPORTER-HEATER;ALUMINA,5G,2ND-W/P	1	
M 28	DE61-70060A	SPRING-PLATE;SK-5,T0.5	1	
M 29	DE61-50490A	BRACKET-TCO;SECC1,T0.6,34,58	1	
M 30	DE03-30035A	MAGNETRON;OM75PH((31)ESS	1	⚠
M 31	DE47-20009A	THERMOSTAT;PW2N-520PB,160/60,250V/7.5A,H,	1	
M 32	DE47-20161A	THERMOSTAT;PW2N(120/110)187Z23.,250V/7.5A	1	
M 33	DE47-20008A	THERMOSTAT;PW2N-52JC,100/60,250V/7.5A,H,1	1	
M 34	DE74-20015B	TRAY-COOKING;GLASS,T6.0,PI318,1050G,MW5630T	1	
M 35	DE92-90189D	ASSY-GUIDE ROLLER;D19,STD	1	
M 36	DE67-60075A	COUPLER;PPS,7G,BRN,M97G45	1	
M 37	DE74-70003A	RACK WIRE;MSWR3,3,290,125,SNC2,CE945G	1	
M 38	DE65-20014A	CABLE CLAMP;DA-6N,NY-66	1	
M 39	DE72-60005A	GUIDE-AIR;SECC1-P,T0.5,210,225	1	
M 40	DE92-90524A	ASSY-COVER BACK;CE945G	1	
M 41	DE63-90065N	CUSHION-GUIDE;PUT-FOAM,T10,W10,L200,BLK,MW55	2	
M 42	DE63-90065O	CUSHION-GUIDE;PUT-FOAM,T35,W20,L135,BLK,MW55	1	
M 43	DE39-40409A	WIRE HARNESS-E;230V50HZ,M9G45,CTW	1	
M 44	DE39-40568A	WIRE HARNESS-A;230V50HZ,CE745G/CE945G	1	
M 45	DE39-20058C	ASSY POWER CORD;KKP-4819D/B232,250V16A,L1700,G	1	
M 46	DE91-70101C	ASSY-THERMOSTAT;MW5574W,160/60,187-HORIZ	1	
M 47	DE74-20107A	TRAY-BROILER;AL,T0.8,-,-,PI345,ENAMEL,SILIC	1	CE959GT/GF
M 48	DE67-60074A	COUPLER-BARBECUE;PTFE,29G,WHT,CE104CF	1	CE959GB/GF
M 49	DE72-80062A	SHAFT-BARBECUE;STS304,D3,L149,W60,25,CE97	1	CE959GB/GF
M 50	DE74-40001A	SPIT-BARBECUE;MSWR,CE945G,SNC2	1	CE959GB/GF
M 51	DE74-20022A	TRAY-OIL;GLASS(NEOREX),T5,PI210,600G	1	CE959GB/GF

7-3 Door Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
D 1	DE64-20112D	HANDLE-DOOR;ABS(HR0370U),30G,WHT,-,M959	1	WHITE (CE959G/GT/GB/GF)
D 1	DE64-20112C	HANDLE-DOOR;ABS,BLK,30G,RE-447	1	RED (CE959G/GT/GB/GF)
D 1	DE64-20112E	HANDLE-DOOR;ABS(HR0370D),30G,GRN,-,M959GR	1	GREEN (CE959G/GT/GB/GF)
D 1	DE64-20112H	HANDLE-DOOR;ABS,(HR0370D,SIL,-,-,CE959GTS	1	SILVER (CE959G/GT/GB/GF)
D 2	DE01-00098A	FILM-DOOR;PET,T0.13,W22.6,L201.8,-,M959	1	
D 3	DE64-40263F	DOOR-A;ABS(HR0370U),160G,WHT,-,M959	1	WHITE (CE959G/GT/GB/GF)
D 3	DE64-40263B	DOOR-A;ABS(HR0370U),160G,RED,-,M959C	1	RED (CE959G/GT/GB/GF)
D 3	DE64-40263H	DOOR-A;ABS(HR0370D),160G,GRN,-,M959GR	1	GREEN (CE959G/GT/GB/GF)
D 3	DE64-40263N	DOOR-A;ABS(HR0370D),CE959GS/CE959GTS	1	SILVER (CE959G/GT/GB/GF)
D 4	DE64-40265D	DOOR-SCREEN;ACRYL(IF850)ED17,M959	1	
D 5	DE92-50127H	ASSY DOOR-E;COATING,BLACK,T0.8	1	
D 6	DE64-40012A	DOOR-C;RESIN-PP(TB53),T2.0,CE945GF,BL	1	
D 7	DE01-00002A	FILM-DOOR;PET,T0.15,275,175,NTR,CE945GF	1	
D 8	DE61-70126A	SPRING-KEY;0.8,0,36,6,BLUING”	1	
D 9	DE64-40264C	DOOR-KEY;POM(F20-02),5g,BLK,1,2ND,HANDL	1	
D 10	DE61-80003A	HINGE-LOWER;SCP1,T2.3,26,77,ZPC3,WHT,CE945	1	
D 11	DE61-80002A	HINGE-UPPER;SCP1,T2.3,26,77,ZPC3,WHT,CE945	1	
D 12	DE92-40197A	ASSY DOOR-A;M959,WHT	1	WHITE (CE959G/GT/GB/GF)
D 12	DE92-40198A	ASSY DOOR-A;M959C,RED	1	RED (CE959G/GT/GB/GF)
D 12	DE92-40199B	ASSY DOOR-A;M959GR,XEF,GRN	1	GREEN (CE959G/GT/GB/GF)
D 12	DE92-40200C	ASSY DOOR-A;M959S/CE959GS,SILVER	1	SILVER (CE959G/GT/GB/GF)

7-4 Body Latch Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
B 1	DE66-40001A	LATCH-BODY;POM(F20-02) 40GR NTR	1	
B 2	3405-000178	SWITCH-MICRO;VP-533A-OF-PS(T85) 250V,15A	2	
B 3	3405-000175	SWITCH-MICRO;VP-531A-OF(T85) 250V,15A,20	1	
B 4	DE66-90001A	LEVER-SWITCH;P.O.M(F20-02) 2 6 NTR 2ND-W	1	

● : Option Parts ⚠ : Warning ⚠ :Electrostatically Sensitive Devices

7-5 Standard Parts List

Parts No.	Description / Specification	Q'ty	Remarks
DE60-10012A	SCREW-TAP TITE;TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	N-F-EA
DE60-10012A	SCREW-TAP TITE;TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	P-C-EA
DE60-10012A	SCREW-TAP TITE;TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	S-M-EA
DE60-10013A	SCREW-ASSY TAP;TH,2S,4,L12,MSWR3,ZPC3,FIBER	1	MO/FAN
DE60-10018A	SCREW-ASSY MACHINE;PH,M4X0.7P,8,MSWR10,SN1,WS	2	B/EATH
DE60-10024A	SCREW-PH;PH,+,M4,L8,MSWR10,ZPC3	2	B/HEAT
DE60-10045A	SCREW-TAP PH;PH,M3,L6,FEFZY	2	MG-TCO
DE60-10069A	SCREW-TAP TH;TH,M4,L10,FRFZY	3	B/UPPE
DE60-10069A	SCREW-TAP TH;TH,M4,L10,FRFZY	1	CV/AIR
DE60-10072A	SCREW-TAP TH;TH,M4,L16,FEFZY,2-SLOT	1	CB-CMP
DE60-10080A	SCREW-WASHER;M5,L12,2S	4	MGT
DE60-10080A	SCREW-WASHER;M5,L12,2S	4	TNS-HV
DE60-10082H	SCREW-A;2S-4X12,TOOTHED	2	B-PLTE
DE60-10082H	SCREW-A;2S-4X12,TOOTHED	2	CN-BOX
DE60-10082H	SCREW-A;2S-4X12,TOOTHED	2	LATCH
DE60-10082H	SCREW-A;2S-4X12,TOOTHED	5	PN-OUT
DE60-10098A	SCREW-ASSY TAP TITE;PH,TC,M4X8,SWRCH18A,ZPC2,GLD,W	1	CV-TCO
DE60-10098A	SCREW-ASSY TAP TITE;PH,TC,M4X8,SWRCH18A,ZPC2,GLD,W	2	M/DRIV
DE60-10122A	SCREW-TAP TH;TAP,TH,2-4X8,FE,FN	2	C-CEIL
DE60-20063A	BOLT-FLANGE;M4,10,ZPC3,YEL,MSWR	2	HI-LOW
DE60-20063A	BOLT-FLANGE;M4,10,ZPC3,YEL,MSWR	2	HI-UPP
DE60-10045A	SCREW-TAP PH;PH,M3,L6,FEFZY	1	-
DE60-10066A	SCREW-TAP TH;TH,M4,L8,FEFZY,2-SLOT	2	H/DOOR
DE60-10012A	SCREW-TAP TITE;TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	-
DE60-10098A	SCREW-ASSY TAP TITE;PH,TC,M4X8,SWRCH18A,ZPC2,GLD,W	1	-
DE60-10088A	SCREW-TAP PH;PH,M3,L8,FEFZY,PLAIN	12	CON/PANEL
DE60-10045A	SCREW-TAP PH;PH,M3,L6,FEFZY	1	GR-TCO

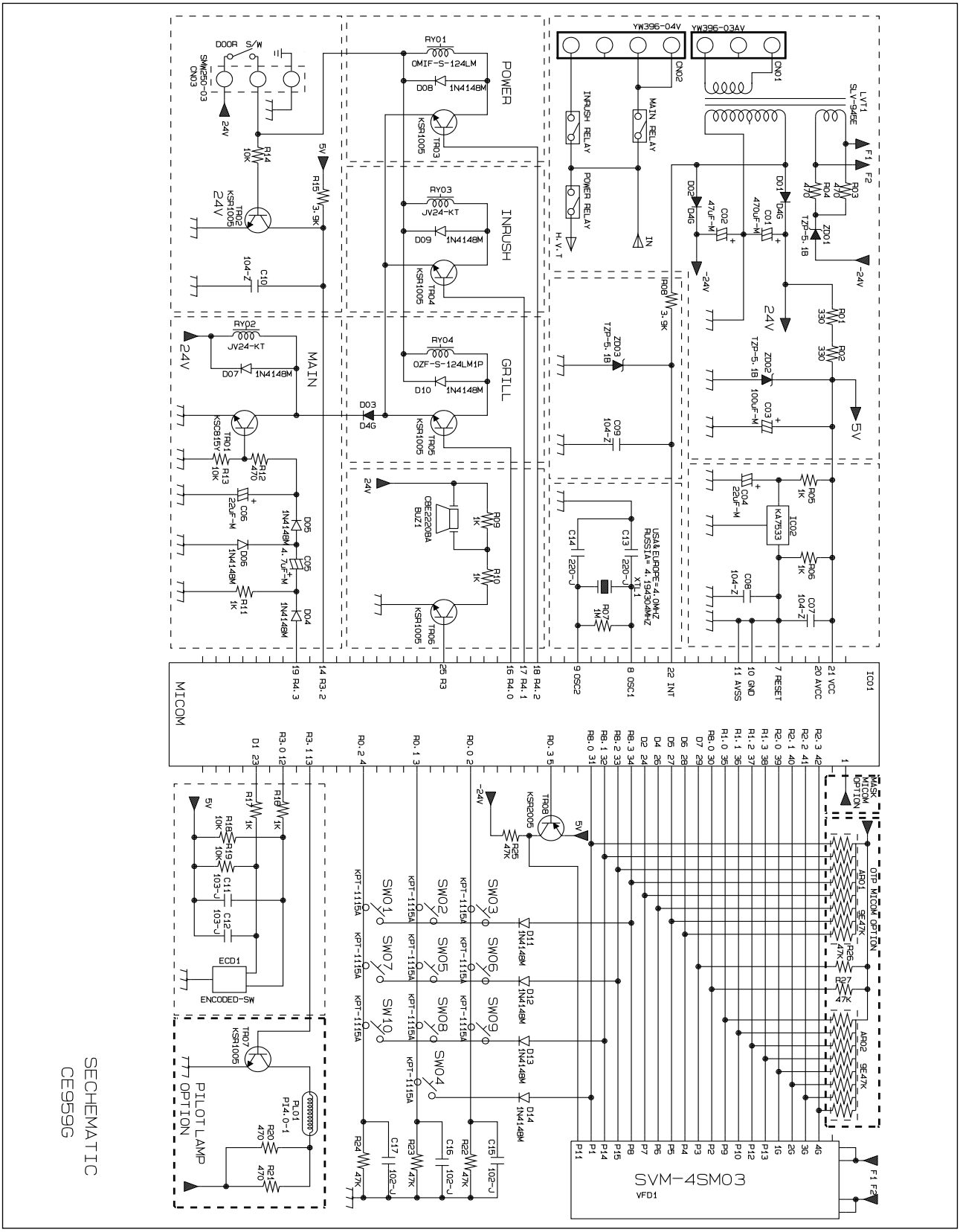
7-6 Control Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
C 1	DE71-60366P	COVER-PANEL;ABS(HR0370U),-,-,-,WHT(W9501)	1	WHITE (CE959G/GT/GB/GF)
C 1	DE71-60366R	COVER-PANEL;ABS(HR0370),-,-,-,BLK,CE959GC	1	RED (CE959G/GT/GB/GF)
C 1	DE71-60366Q	COVER-PANEL;ABS(HR0370D)	1	GREEN (CE959G/GT/GB/GF)
C 1	DE71-60366S	COVER-PANEL;ABS(HR0370D),-,-,-,SIL,CE959GS	1	SILVER (CE959G/GT/GB/GF)
C 2	DE67-40145A	WINDOW-DISPLAY;ACRYL,T2,W40,L77,SMOG,30G	1	
C 3	DE72-70171S	CONTROL-PANEL;ABS(HR0370U),WHT,-,-,CE959G	1	CE959G (WHITE)
C 3	DE72-70171T	CONTROL-PANEL;ABS(HR0370D),GRN,-,-,CE959GGR	1	CE959GGR (GREEN)
C 3	DE72-70171U	CONTROL-PANEL;ABS(HR0370D),RED,-,-,CE959GC	1	CE959GC (RED)
C 3	DE72-70171V	CONTROL-PANEL;ABS(HR0370D),SIL,-,-,CE959GS	1	CE959GS (SILVER)
C 3	DE72-70171W	CONTROL-PANEL;ABS(HR0370U),WHT,-,-,CE959GT	1	CE959GT (WHITE)
C 3	DE72-70171X	CONTROL-PANEL;ABS(HR0370D),GRN,-,-,CE959GTGR	1	CE959GTGR (GREEN)
C 3	DE72-70171Y	CONTROL-PANEL;ABS(HR0370D),RED,-,-,CE959GTC	1	CE959GTC (RED)
C 3	DE72-70171Z	CONTROL-PANEL;ABS(HR0370D),SIL,-,-,CE959GTS	1	CE959GTS (SILVER)
C 3	DE72-70211C	CONTROL-PANEL;ABS(HR0370U),WHT,-,-,CE959GB	1	CE959GB (WHITE)
C 3	DE72-70211D	CONTROL-PANEL;ABS(HR0370D),GRN,-,-,CE959GBGR	1	CE959GBGR (GREEN)
C 3	DE72-70211E	CONTROL-PANEL;ABS(HR0370D),RED,-,-,CE959GBC	1	CE959GBC (RED)
C 3	DE72-70211F	CONTROL-PANEL;ABS(HR0370D),SIL,-,-,CE959GBS	1	CE959GBS (SILVER)
C 3	DE72-70211G	CONTROL-PANEL;ABS(HR0370U),WHT,-,-,CE959GF	1	CE959GF (WHITE)
C 3	DE72-70211H	CONTROL-PANEL;ABS(HR0370D),GRN,-,-,CE959GFGR	1	CE959GFGR (GREEN)
C 3	DE72-70211J	CONTROL-PANEL;ABS(HR0370D),RED,-,-,CE959GFC	1	CE959GFC (RED)
C 3	DE72-70211K	CONTROL-PANEL;ABS(HR0370D),SIL,-,-,CE959GFS	1	CE959GFS (SILVER)
C 4	DE66-20174R	BUTTON-SELECT-A;PC,2G,-,WHT,M959	1	WHITE (CE959G/GT/GB/GF)
C 4	DE66-20174S	BUTTON-SELECT-A;PC,2G,-,WINE-RED,M759C	1	RED (CE959G/GT/GB/GF)
C 4	DE66-20174T	BUTTON-SELECT-A;PC,2G,-,DEEP-GRN,M759GR	1	GREEN (CE959G/GT/GB/GF)
C 4	DE66-20174Y	BUTTON-SELECT(A);PC,-,-,SIL,CE959GS/CE959GTS	1	SILVER (CE959G/GT/GB/GF)
C 5	DE66-20197J	BUTTON-SELECT(A-B);PC,2G,-,WHT,M959	1	WHITE (CE959G/GT/GB/GF)
C 5	DE66-20197K	BUTTON-SELECT(A-B);PC,2G,-,WINE-RED,M759C	1	RED (CE959G/GT/GB/GF)
C 5	DE66-20197L	BUTTON-SELECT(A-B);PC,2G,-,DEEP-GRN,M759GR	1	GREEN (CE959G/GT/GB/GF)
C 5	DE66-20197R	BUTTON-SELECT(A-B);PC,-,-,SIL,CE959GS/CE959GTS	1	SILVER (CE959G/GT/GB/GF)
C 6	DE66-20198J	BUTTON-SELECT(A-C);PC,2G,WHT,M959	1	WHITE (CE959G/GT/GB/GF)
C 6	DE66-20198K	BUTTON-SELECT(A-C);PC,2G,-,WINE-RED,M759C	1	RED (CE959G/GT/GB/GF)
C 6	DE66-20198L	BUTTON-SELECT(A-C);PC,2G,-,DEEP-GRN,M759GR	1	GREEN (CE959G/GT/GB/GF)
C 6	DE66-20198R	BUTTON-SELECT(A-C);PC,-,-,SIL,CE959GS/CE959GTS	1	SILVER (CE959G/GT/GB/GF)
C 7	DE66-20179A	BUTTON-SELECT;ABS(HR0370),NTR,30G,RE-445	1	
C 8	DE91-10537A	ASSY PCB-MAIN;RC-959G-00,230V50Hz,VFD,CE959G	1	● ⚠
C 9	DE66-20175E	BUTTON-SELECT-B;ABS(HR0370U),5G,-,WHT,M959	1	WHITE (CE959G/GT/GB/GF)
C 9	DE66-20175D	BUTTON-SELECT-B;ABS(HR0370),BLK,5G,RE-446	1	RED (CE959G/GT/GB/GF)
C 9	DE66-20175F	BUTTON-SELECT-B;ABS(HR0370D),5G,-,GRN,M959GR	1	GREEN (CE959G/GT/GB/GF)
C 9	DE66-20175J	BUTTON-SELECT(B);ABS(HR0370D),-,-,SIL,CE959GS	1	SILVER (CE959G/GT/GB/GF)
C 10	DE66-20176E	BUTTON-SELECT-C;ABS(HR0370U),5G,-,WHT,M959	1	WHITE (CE959G/GT/GB/GF)
C 10	DE66-20176D	BUTTON-SELECT-C;ABS(HR0370),BLK,5G,RE-446	1	RED (CE959G/GT/GB/GF)
C 10	DE66-20176F	BUTTON-SELECT-C;ABS(HR0370D),5G,-,GRN,M959GR	1	GREEN (CE959G/GT/GB/GF)
C 10	DE66-20176J	BUTTON-SELECT(C);ABS(HR0370D),-,-,SIL,CE959GS	1	SILVER (CE959G/GT/GB/GF)

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
C 11	DE66-20177E	BUTTON-SELECT-D;ABS(HR0370U),3G,-,WHT,M959	1	WHITE (CE959G/GT/GB/GF)
C 11	DE66-20177B	BUTTON-SELECT-D;ABS(HR0370),BLK,3G,RE-445R	1	RED (CE959G/GT/GB/GF)
C 11	DE66-20177F	BUTTON-SELECT-D;ABS(HR0370D),2G,-,GRN,M959GR	1	GREEN (CE959G/GT/GB/GF)
C 11	DE66-20177L	BUTTON-SELECT(D);ABS(HR0370D),-,-,SIL,CE959GS	1	SILVER (CE959G/GT/GB/GF)
C 12	DE66-20178E	BUTTON-SELECT-E;ABS(HR0370U),WHT,-,2G,M959	1	WHITE (CE959G/GT/GB/GF)
C 12	DE66-20178B	BUTTON-SELECT-E;ABS(HR0370),RED,2G,RE-445R	1	RED (CE959G/GT/GB/GF)
C 12	DE66-20178F	BUTTON-SELECT-E;ABS(HR0370D),2G,-,GRN,M959GR	1	GREEN (CE959G/GT/GB/GF)
C 12	DE66-20178L	BUTTON-SELECT(E);ABS(HR0370D),-,-,SIL,CE959GS	1	SILVER (CE959G/GT/GB/GF)
C 13	DE64-10127B	KNOB-COVER;ABS(HR0370U),-,WHT(W9501),-,CE	1	WHITE (CE959G/GT/GB/GF)
C 13	DE64-10127D	KNOB-COVER;ABS(HR0370D),-,-,RED,CE959GC	1	RED (CE959G/GT/GB/GF)
C 13	DE64-10127C	KNOB-COVER;ABS(HR0370),-,-,GRN,CE959GGR	1	GREEN (CE959G/GT/GB/GF)
C 13	DE64-10127E	KNOB-COVER;ABS(HR0370D),-,-,SIL,CE959GS	1	SILVER (CE959G/GT/GB/GF)
C 14	DE66-20182B	BUTTON-START;ABS(HR0370U),-,-,WHT(W9501),CE	1	WHITE (CE959G/GT/GB/GF)
C 14	DE66-20182D	BUTTON-START;ABS(HR0370),-,-,RED,CE959GC	1	RED (CE959G/GT/GB/GF)
C 14	DE66-20182C	BUTTON-START;ABS(HR0370),-,-,GRN,CE959GGR	1	GREEN (CE959G/GT/GB/GF)
C 14	DE66-20182E	BUTTON-START;ABS(HR0370D),-,-,SIL,CE959GS	1	SILVER (CE959G/GT/GB/GF)
C 15	DE71-60378A	COVER-LAMP;POM,T2,W19.4,L27,3G,NTR,RE-446	1	
C 16	DE93-30406W	ASSY CONTROL-PANEL;CE959GT	1	CE959GT (WHITE)
C 16	DE93-30406U	ASSY CONTROL-PANEL;CE959GC	1	CE959GC (RED)
C 16	DE93-30406T	ASSY CONTROL-PANEL;CE959GGR	1	CE959GGR (GREEN)
C 16	DE93-30406Z	ASSY CONTROL-PANEL;CE959GTS	1	CE959GTS (SILVER)
C 16	DE93-30406S	ASSY CONTROL-PANEL;CE959G	1	CE959G (WHITE)
C 16	DE93-30406V	ASSY CONTROL-PANEL;CE959GS	1	CE959GS (SILVER)
C 16	DE93-30406X	ASSY CONTROL-PANEL;CE959GTGR	1	CE959GTGR (GREEN)
C 16	DE93-30406Y	ASSY CONTROL-PANEL;CE959GTC	1	CE959GTC (RED)
C 16	DE93-30543C	ASSY CONTROL-PANEL;CE959GB	1	CE959GB (WHITE)
C 16	DE93-30543D	ASSY CONTROL-PANEL;CE959GBGR	1	CE959GBGR (GREEN)
C 16	DE93-30543E	ASSY CONTROL-PANEL;CE959GBC	1	CE959GBC (RED)
C 16	DE93-30543F	ASSY CONTROL-PANEL;CE959GBS	1	CE959GBS (SILVER)
C 16	DE93-30543G	ASSY CONTROL-PANEL;CE959GF,FULL	1	CE959GF (WHITE)
C 16	DE93-30543H	ASSY CONTROL-PANEL;CE959GFGR,FULL	1	CE959GFGR (GREEN)
C 16	DE93-30543J	ASSY CONTROL-PANEL;CE959GFC,FULL	1	CE959GFC (RED)
C 16	DE93-30543K	ASSY CONTROL-PANEL;CE959GFS,FULL	1	CE959GFS (SILVER)

8. P.C.B Diagrams

8-1 P.C.B Diagrams

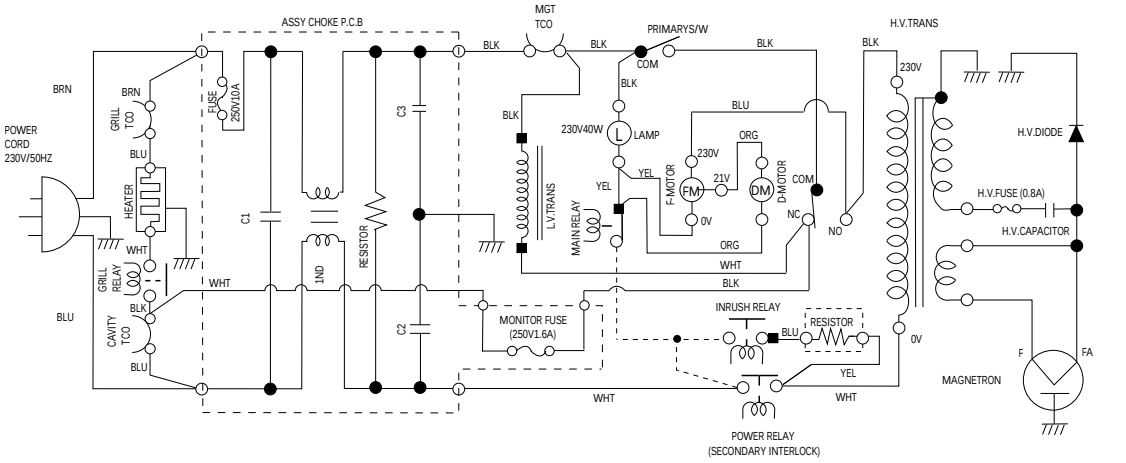


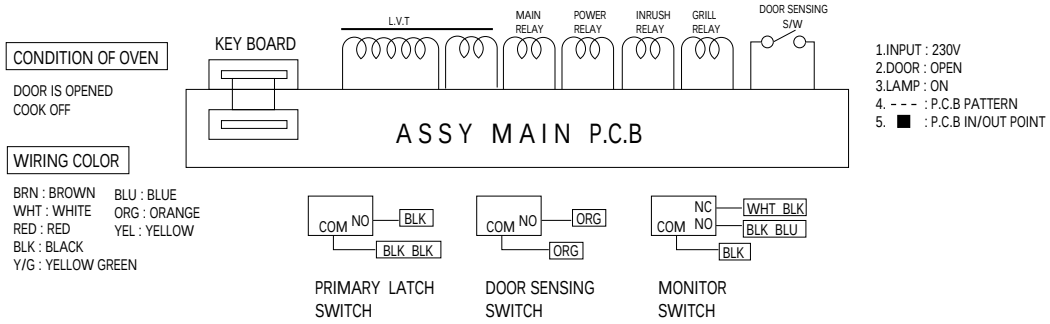
8-2 P.C.B Parts List

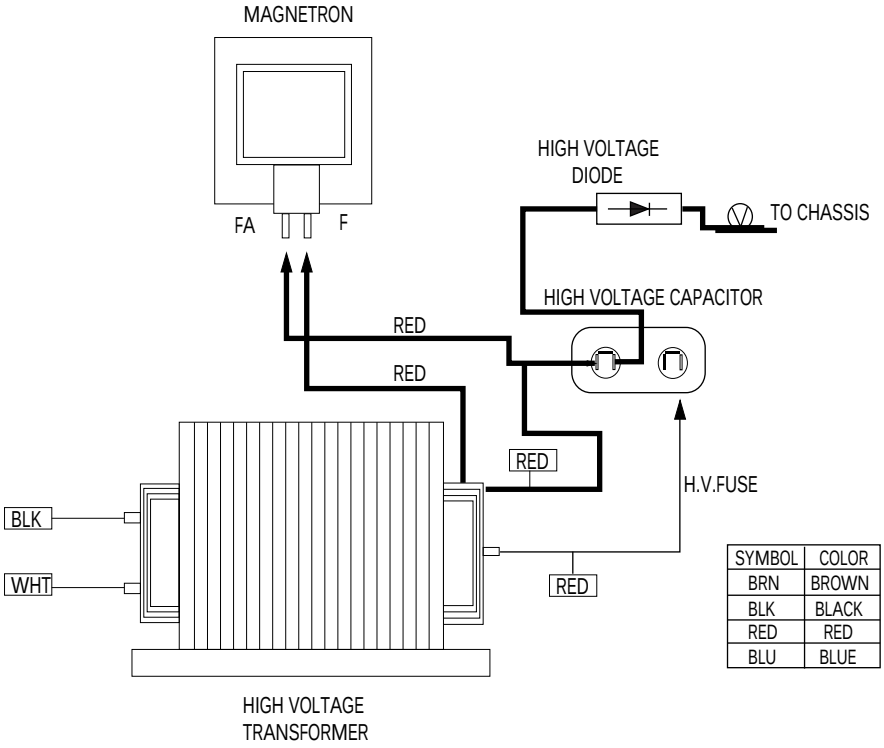
Parts No.	Description / Specification	Q'ty	Remarks
3501-001050	RELAY-MINIATURE;24VDC,200mW,5A,1FormA,10mS,5mS	1	RY02RY03
3501-001062	RELAY-POWER;24VDC,523.2mW,16A,1FormA,15mS	1	RY01
3501-001068	RELAY-POWER;24Vdc,523mW,16A,1FormA,15mS,10	1	RY04
DE07-10081A	V.F.DISPLAY;SVM-4SM03,GRN/RSHORG,4,51,81.7	1	VFD1
DE09-30725A	IC-MCU;HD404316-D48S,CE959G	1	IC01
DE26-20141A	TRANS-L.V;SLV-945E,230V,50HZ,AC17/2.9V	1	LVT1
DE30-20016A	BUZZER;CBE2220BA,STICK	1	BUZ1
DE39-40723A	WIRE HARNESS;DC35V,C-959G,80mm,12PIN	1	CN05
DE61-90320A	HOLDER-DIGITRON;PP,-,W37,L83.3,-,CE959G	1	-
DE91-20635A	ASSY PCB AUTO-MAIN;230V50Hz,VFD,CE959G	1	-
0401-001002	DIODE-SWITCHING;1N4148M,100V,200mA,500mW,3nS,D	11	D04~D14
0402-001103	DIODE-RECTIFIER;1T4,400V,1A,TS-1,TP	3	D01~D03
0403-000717	DIODE-ZENER;MTZJ5.1B,5.1V,4.94-5.2V,500mW	3	ZD01~ZD03
0501-000388	TR-SMALL SIGNAL;KSC815,NPN,400mW,TO-92,BK,120	1	TR01
0504-001014	TR-DIGITAL;KSR1005,NPN,300mW,4.7K-10K,TO-	5	TR02~TR06
0504-001015	TR-DIGITAL;KSR2005,PNP,300mW,4.7K-10K,TO-	1	TR08
2001-000037	R-CARBON(S);330ohm,5%,1/2W,AA,TP,2.4x6.4mm	2	R01,R02
2001-000290	R-CARBON;10Kohm,5%,1/8W,AA,TP,1.8x3.2mm	4	R13,R14,R18,R19
2001-000429	R-CARBON;1Kohm,5%,1/8W,AA,TP,1.8x3.2mm	7	R05,R06,R09~R11,R16,R17
2001-000435	R-CARBON;1Mohm,5%,1/8W,AA,TP,1.8x3.2mm	1	R07
2001-000613	R-CARBON;3.9Kohm,5%,1/8W,AA,TP,1.8x3.2m	2	R08R15
2001-000780	R-CARBON;470ohm,5%,1/8W,AA,TP,1.8x3.2mm	3	R03,R04,R12
2001-000786	R-CARBON;47Kohm,5%,1/8W,AA,TP,1.8x3.2mm	4	R22~R25
2202-000127	C-CERAMIC,MLC-AXIAL;10nF,+80-20%,25V,Y5V,TP,-,7.5	2	C11,C12
2202-000780	C-CERAMIC,MLC-AXIAL;100nF,+80-20%,50V,Y5V,TP,3.5x1	4	C07~C10
2202-000796	C-CERAMIC,MLC-AXIAL;1nF,10%,50V,Y5P,TP,3.5x19	3	C15~C17
2401-000247	C-AL;100uF,20%,10V,GP,-,6.3x11mm,5m	1	C03
2401-000914	C-AL;22uF,20%,16V,GP,TP,5x11,5	2	C04,C06
2401-001268	C-AL;4.7uF,20%,50V,GP,TP,5x11,5	1	C05
2401-001412	C-AL;470uF,20%,35V,GP,TP,10x16,5	1	C01
2401-001573	C-AL;47uF,20%,50V,GP,TP,6.3x11,2.5	1	C02
2802-000161	RESONATOR-CERAMIC;4MHz,0.5%,TP,10.0x5.0x7.5mm	1	XTL1
3404-000282	SWITCH-TACT;12Vdc,50mA,120+-30gf,6.2x3.6mm	10	SW01~SW10
3711-000203	CONNECTOR-HEADER;1WALL,3P,1R,3.96mm,ANGLE,SN	1	CN01
3711-000240	CONNECTOR-HEADER;1WALL,4P,1R,3.96mm,STRAIGHT,SN	1	CN02
3711-000881	CONNECTOR-HEADER;BOX,3P,1R,2.5mm,STRAIGHT,SN	1	CN03
DE13-20009A	IC;KA7533,DIP	1	IC02
DE39-60001A	WIRE-SO COPPER;PI0.6,SN,T,52MM,TAPING_WIRE	14	J01~J03,J05~J15
DE41-10463A	P.C.B-MAIN;FR-1,T1.6,W89,L330,CE959G	1	-
DE60-60012A	PIN-EYELET;ID2.1,OD2.5,L3.0,SN,BSP,T0.25	5	-

9. Schematic Diagrams

9-1 Schematic Diagrams







2. Specifications

2-1 Table of Specifications

ITEM \ MODEL	CE959G
TIMER	99 MINUTES 90 SECONDS
POWER SOURCE	230V/50HZ, AC
POWER CONSUMPTION	MICROWAVE : 1,500W
	GRILL : 1,300W
OUTPUT POWER	FROM90 TO 900W
	(10 LEVEL POWER)
	(IEC-705 TEST PROCEDURE)
OPERATING FREQUENCY	2,450MHz
MAGNETRON	OM75PH(31)
COOLING METHOD	COOLING FAN MOTOR
OUTSIDE DIMENSIONS	517(W) x 297(H) x 410(D)
NET WEIGHT	20 Kg
SHIPPING WEIGHT	22 Kg

POWER LEVEL		ON TIME	OFF TIME
%	CE959G		
10%	90W	4 sec	26 sec
20%	180W	7 sec	23 sec
30%	270W	10 sec	20 sec
40%	360W	13 sec	17 sec
50%	450W	16 sec	14 sec
60%	540W	19 sec	11 sec
70%	630W	22 sec	8 sec
80%	720W	25 sec	5 sec
90%	810W	28 sec	2 sec
100%	900W	30 sec	0 sec

2-2 Comparison Chart

FEATURE \ MODEL	CE959G
MORE/LESS	O
AUTO REHEAT	O
AUTO DEFROST	O
AUTO COOK	O
TIME COOK	O
POWER LEVEL (10)	O
CHILD LOCK	O
CLOCK	O
GRILL	O
COMBI	O
BEEPER ON/OFF	O

SAMSUNG

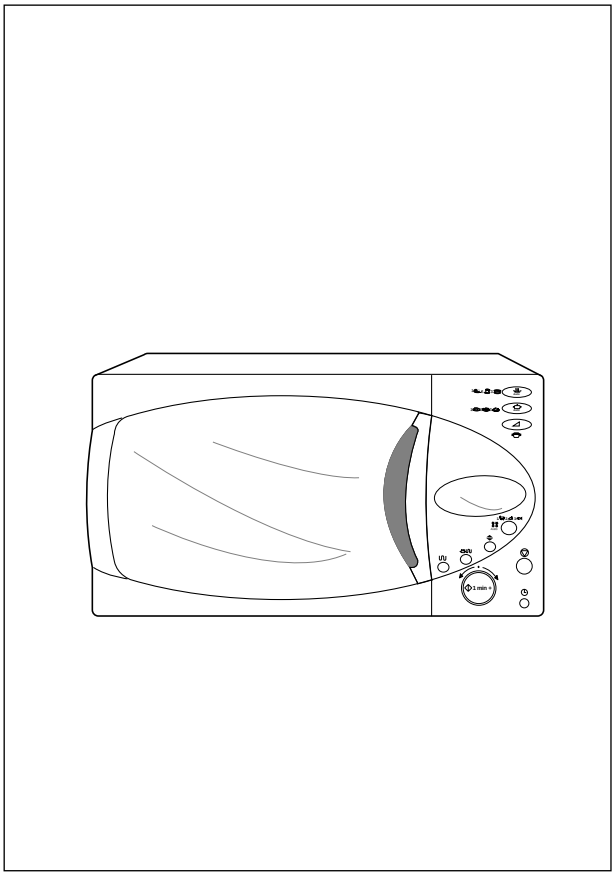
MICROWAVE OVEN

CE959GT (DARK GRAY)

SERVICE Manual Supplement

THIS SUPPLEMENT CONTAINS EXPLODED VIEW AND PARTS LIST FOR MODEL CE959GT(DARK GRAY). FOR MORE SERVICING INFORMATION, PLEASE CONSULT THE PREVIOUS SERVICE MANUAL FOR CE959G WHICH WAS DISTRIBUTED IN JULY 1998.

MICROWAVE OVEN



CONTENTS

1. Precaution
2. Control Panel
3. Exploded View & Parts List
4. P.C.B Diagram
5. Schematic Diagrams

Specifications

TIMER	99 MINUTES 90 SECONDS
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	(10 LEVEL POWER)
	(IEC-705 TEST PROCEDURE)
OPERATING FREQUENCY	2,450MHz
MAGNETRON	OM75PH(31)
COOLING METHOD	COOLING FAN MOTOR
OUTSIDE DIMENSIONS	517(W) x 297(H) x 410(D)
NET WEIGHT	20 Kg
SHIPPING WEIGHT	22 Kg

AMFO

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.
(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
(1) Interlock operation,
(2) proper door closing,
(3) seal and sealing surfaces (arcing, wear, and other damage),
(4) damage to or loosening of hinges and latches,
(5) evidence of dropping or abuse.

(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(e) A Microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.

1. Precaution

Follow these special safety precautions. Although the microwave oven is completely safe during ordinary use, repair work can be extremely hazardous due to possible exposure to microwave radiation, as well as potentially lethal high voltages and currents.

1-1 Safety precautions (⚠)

1. All repairs should be done in accordance with the procedures described in this manual. This product complies with Federal Performance Standard 21 CFR Subchapter J (DHHS).

2. Microwave emission check should be performed to prior to servicing if the oven is operative.

3. If the oven operates with the door open : Instruct the user not to operate the oven and contact the manufacturer and the center for devices and radiological health immediatly.

4. Notify the Central Service Center if the microwave leakage exceeds 5 mW/cm^2

5. Check all grounds.

6. Do not power the MWO from a "2-prong" AC cord. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.

7. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.

8. Make sure that there are no cabinet openings through which people--particularly children--might insert objects and contact dangerous voltages. Examples: Lamp hole, ventilation slots.

9. Inform the manufacturer of any oven found to have emmission in excess of 5 mW/cm^2, Make repairs to bring the unit into compliance at no cost to owner and try to determine cause.
   Instruct owner not to use oven until it has been brought into compliance.

   CENTRAL SERVICE CENTER

10. Service technicians should remove their watches while repairing an MWO.

11. To avoid any possible radiation hazard, replace parts in accordance with the wiring diagram. Also, use only the exact replacements for the following parts: Primary and secondary interlock switches, interlock monitor switch.
12. If the fuse is blown by the Interlock Monitor Switch: Replace all of the following at the same time: Primary and secondary switches, as well as the Interlock Monitor Switch. The correct adjustment of these switches is described elsewhere in this manual. Make sure that the fuse has the correct rating for the particular model being repaired.

13. Design Alteration Warning:
    Use exact replacement parts only, i.e., only those that are specified in the drawings and parts lists of this manual. This is especially important for the Interlock switches, described above. Never alter or add to the mechanical or electrical design of the MWO. Any design changes or additions will void the manufacturer's warranty.10.Always unplug the unit's AC power cord from the AC power source before attempting to remove or reinstall any component or assembly.

14. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

15. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs). Examples include integrated circuits and field-effect transistors.

    Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground.

16. Always connect a test instrument's ground lead to the instrument chassis ground *before* connecting the positive lead; always remove the instrument's ground lead last.

1-2 Special Servicing Precautions (Continued)

17. When checking the continuity of the witches or transformer, always make sure that the power is OFF, and one of the lead wires is disconnected.
18. Components that are critical for safety are indicated in the circuit diagram by shading, ⚠ or ⚠.
19. Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-3 Special High Voltage Precautions

1. High Voltage Warning
   Do not attempt to measure any of the high voltages--this includes the filament voltage of the magnetron. High voltage is present during any cook cycle.

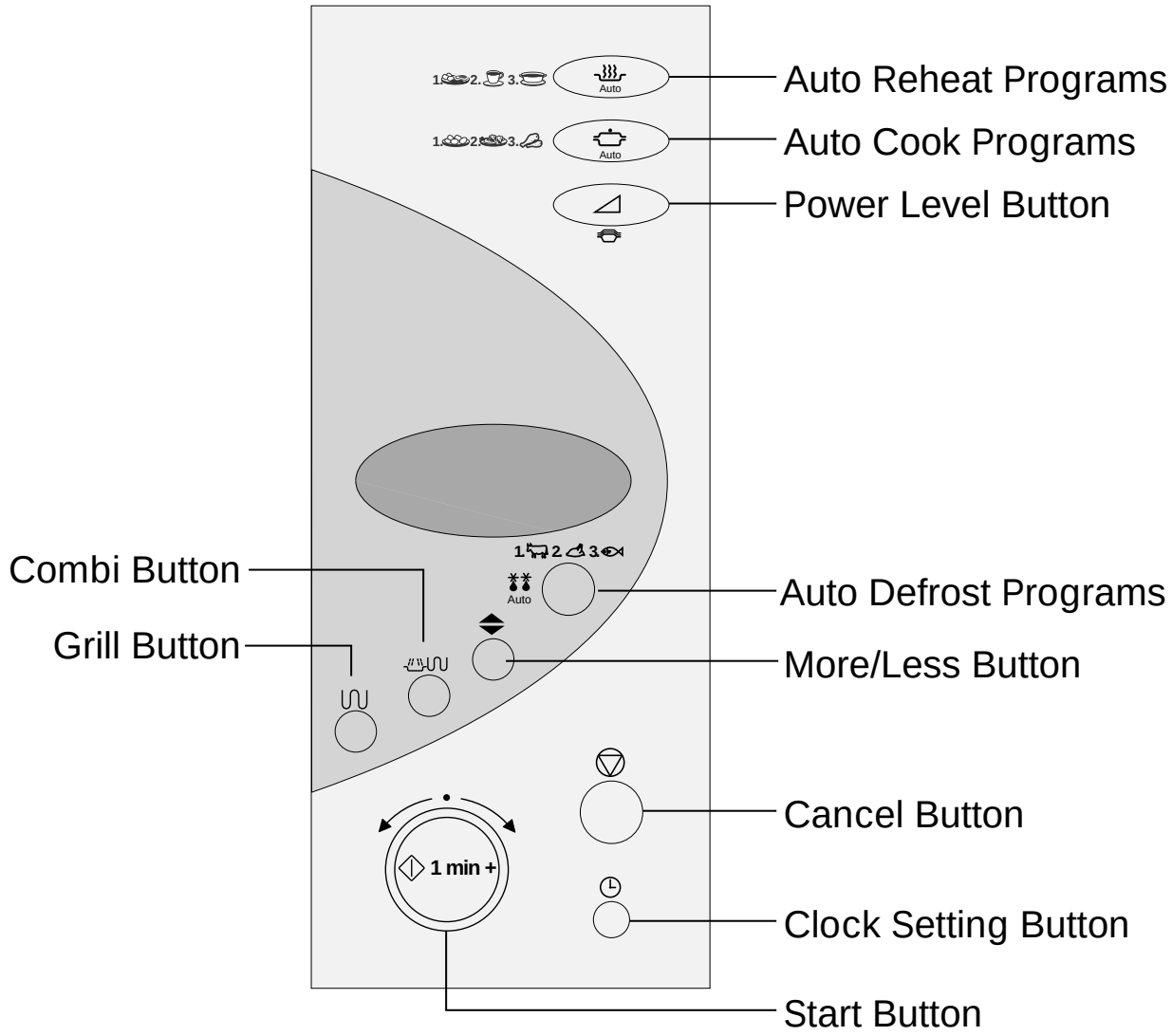
   Before touching any components or wiring, always unplug the oven and discharge the high voltage capacitor (See Figure 1-1)

2. The high-voltage capacitor remains charged about 30 seconds after disconnection. Short the negative terminal of the high-voltage capacitor to the oven chassis. (Use a screwdriver.)

3. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

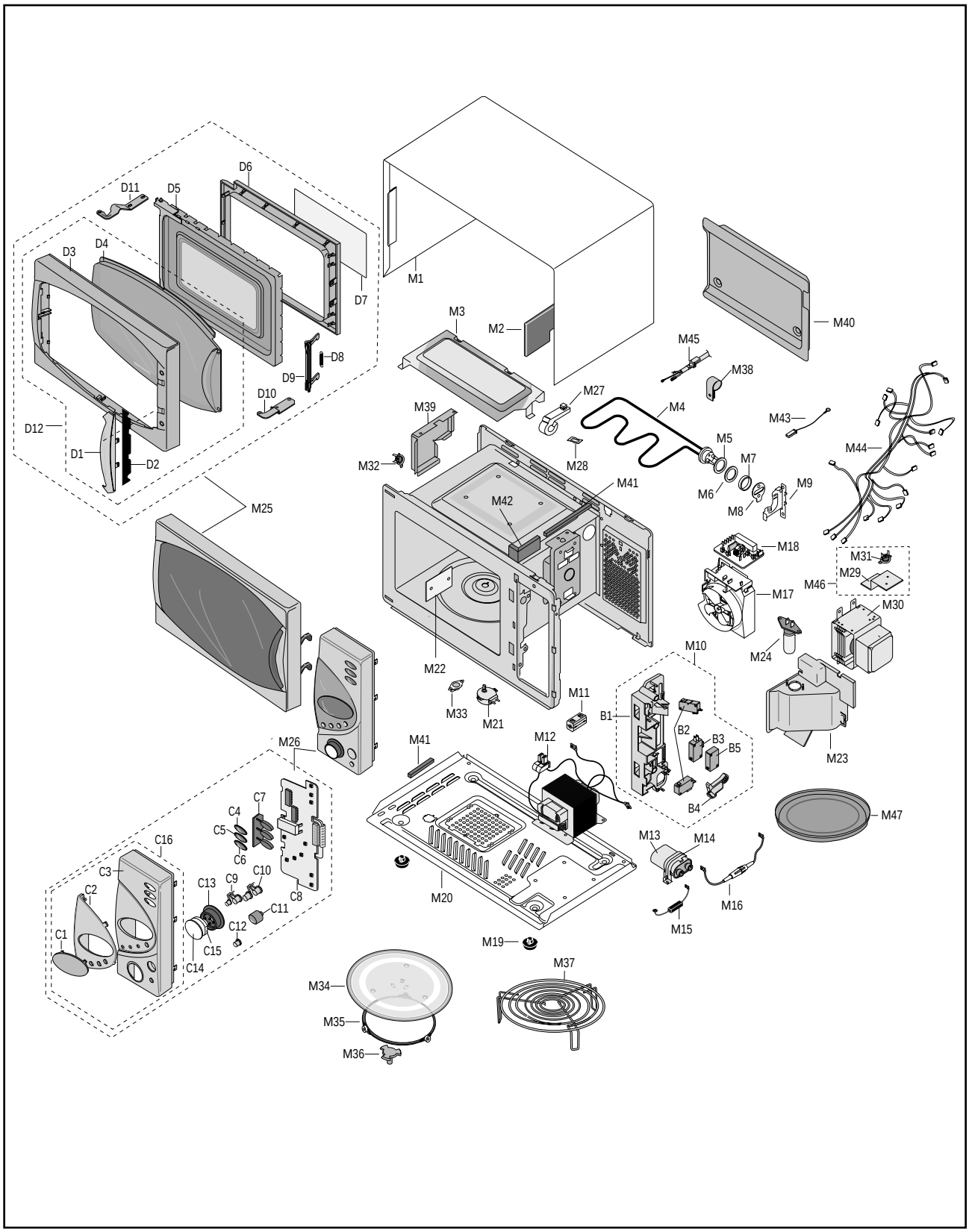
Fig. 1-1. Discharging the High Voltage Capacitor

2. Control Panel



3. Exploded Views and Parts List

3-1 Exploded Views



4-2 Main Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
M 1	DE70-30001C	PANEL-OUTER;V/STEEL,T0.7,360,1128,STONE-GR	1	
M 2	DE63-90035G	CUSHION-RUBBER;DFA20,T2,W190,L100,BLK	1	
M 3	DE61-50017A	BRACKET-UPPER;SECC1,T0.6,340,216	1	
M 4	DE47-70031G	HEATER-GRILL;D6.6,230V1280W,M9G45,SJH	1	
M 5	DE63-20017A	GASKET-HEATER;BRASS,T1.5,OD30.5,ID22.5	1	
M 6	DE60-40009B	WASHER-TEFLON;SLOT,ID22.2,OD28,T1.2,TEFLON	1	
M 7	DE61-50021A	BRACKET-FLANGE;SECC1,T0.8,32,32	1	
M 8	DE61-50347A	BRACKET-EARTH;BSS2-A,T1.0,W35,L43,MBGF45	1	
M 9	DE61-50027B	BRACKET-HEATER;SECC,T1.0,W51,L55,CE945GF	1	
M 10	DE93-20020A	ASSY BODY LATCH;RE-43B/90B	1	
M 11	DE73-90027A	FERRITE-CORE;NI-ZN,T13.8,W21.0,L28.0,BNF-14	1	
M 12	DE26-10100A	TRANS-H.V;SHV-945EG1,230V,2280V/3.15V,50	1	
M 13	2501-001030	C-OIL;1.1uF,2100V,BK,35x54x95,20mm	1	
M 14	DE61-50106A	BRACKET-HVC;SECC,T0.8,W31,L125.8	1	⚠
M 15	DE59-40001A	DIODE-H.V;HVR-1X-32B-12	1	
M 16	DE91-70061A	ASSY-H.V.FUSE;THV060T-0800-H,5KV/0.8A,WHT	1	
M 17	DE31-10156A	MOTOR-FAN;SMF-945EA,230/50,2400,M97G45	1	
M 18	DE91-40095A	ASSY NOISE FILTER;SN-E10D(N),250V,10A,2ND-WD-TYP	1	
M 19	DE61-40017A	FOOT;PP(A353),BLK,MW5630T	2	
M 20	DE80-10001A	BASE-PLATE;SGCC,T0.8,345,565,	1	
M 21	DE31-10154A	MOTOR-DRIVE;M2HJ49ZR02,ST-16,21V,5/6	1	
M 22	DE71-60382A	COVER-CEILING;MICASHEET,T0.5,70,133	1	
M 23	DE71-60016A	COVER-AIR;PP,2,WHT,M945/M245	1	
M 24	4713-001031	LAMP-INCANDESCENT;230V,173mA,40W,ORG,-,-,25x69mm	1	
M 25	DE94-00024A	ASSY DOOR;CE959GT-D,DARK-GRAY,AMFO	1	
M 26	DE94-00025A	ASSY CONTROL-BOX;230V50HZ,CE959GT-D,DARK-GRAY,AMFO	1	
M 27	DE61-30006A	SUPPORTER-HEATER;ALUMINA,5G,2ND-W/P	1	
M 28	DE61-70060A	SPRING-PLATE;SK-5,T0.5	1	
M 29	DE61-50490A	BRACKET-TCO;SECC1,T0.6,34,58	1	
M 30	DE03-30035A	MAGNETRON;OM75PH((31)ESS	1	
M 31	DE47-20009A	THERMOSTAT;PW2N-520PB,160/60,250V/7.5A,H,	1	
M 32	DE47-20161A	THERMOSTAT;PW2N(120/110)187Z23.,250V/7.5A	1	
M 33	DE47-20008A	THERMOSTAT;PW2N-52JC,100/60,250V/7.5A,H,1	1	
M 34	DE74-20015B	TRAY-COOKING;GLASS,T6.0,PI318,1050G,MW5630T	1	
M 35	DE92-90189D	ASSY-GUIDE ROLLER;D19,STD	1	
M 36	DE67-60075A	COUPLER;PPS,7G,BRN,M97G45	1	
M 37	DE74-70003A	RACK WIRE;MSWR3,3,290,125,SNC2,CE945G	1	
M 38	DE65-20014A	CABLE CLAMP;DA-6N,NY-66	1	
M 39	DE72-60005A	GUIDE-AIR;SECC1-P,T0.5,210,225	1	
M 40	DE92-90524A	ASSY-COVER BACK;CE945G	1	
M 41	DE63-90065N	CUSHION-GUIDE;PUT-FOAM,T10,W10,L200,BLK,MW55	2	
M 42	DE63-90065O	CUSHION-GUIDE;PUT-FOAM,T35,W20,L135,BLK,MW55	1	
M 43	DE39-40409A	WIRE HARNESS-E;230V50HZ,M9G45,CTW	1	
M 44	DE39-40568A	WIRE HARNESS-A;230V50HZ,CE745G/CE945G	1	
M 45	DE39-20058C	ASSY POWER CORD;KKP-4819D/B232,250V16A,L1700,G	1	
M 46	DE91-70101C	ASSY-THERMOSTAT;MW5574W,160/60,187-HORIZ	1	
M 47	DE74-20107A	TRAY BROILER;CE945GF(SSW),MW5574W	1	

3-3 Door Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
D 1	DE64-20112J	HANDLE;ABS(HR0370),30G,-,-,-,D/GRAY,M959-D	1	
D 2	DE94-00013A	ASSY DOOR-A;M959-D,D/GRAY	1	
D 3	DE64-40263P	DOOR-A;ABS,-,M959-D	1	
D 4	DE64-40265D	DOOR-SCREEN;ACRYL(IF850)ED17,M959	1	
D 5	DE92-50127H	ASSY DOOR-E;COATING,BLACK,T0.8	1	
D 6	DE64-40012A	DOOR-C;RESIN-PP(TB53),T2.0,CE945GF,BL	1	
D 7	DE01-00002A	FILM-DOOR;PET,T0.15,275,175,NTR,CE945GF	1	
D 8	DE61-70126A	SPRING-KEY;0.8,0,36,6,BLUING”	1	
D 9	DE64-40264C	DOOR-KEY;POM(F20-02),5g,BLK,1,2ND,HANDL	1	
D 10	DE61-80003A	HINGE-LOWER;SCP1,T2.3,26,77,ZPC3,WHT,CE945	1	
D 11	DE61-80002A	HINGE-UPPER;SCP1,T2.3,26,77,ZPC3,WHT,CE945	1	

3-4 Control Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
C 1	DE71-00002A	COVER-PANEL;ABS(HR0370D),-,-,-,CE959GT-D,DARK-GRAY	1	
C 2	DE67-40145A	WINDOW-DISPLAY;ACRYL,T2,W40,L77,SMOG,30G	1	
C 3	DE72-70211Q	CONTROL-PANEL;ABS(HR0370D),WHT,-,-,CE959GT-D	1	
C 4	DE66-00001A	BUTTON-SELECT(A);PC	1	
C 5	DE66-20197V	BUTTON-SELECT(A-B);PC,-,-,M959-D,D/GRAY	1	
C 6	DE66-20198V	BUTTON-SELECT(A-C);PC,-,-,M959-D,D/GRAY	1	
C 7	DE66-20179A	BUTTON-SELECT;ABS(HR0370),NTR,30G,RE-445	1	
C 8	DE91-10537A	ASSY PCB-MAIN;RC-959G-00,230V50Hz,VFD,CE959G	1	● ⚠
C 9	DE66-20175L	BUTTON-SELECT(B);ABS(HR0370),-,-,M959-D,D/GRAY	1	
C 10	DE66-20176L	BUTTON-SELECT(C);ABS(HR0370),-,-,M959-D,D/GRAY	1	
C 11	DE66-20177M	BUTTON-SELECT(D);ABS(HR0370),-,-,M959-D,D/GRAY	1	
C 12	DE66-20178M	BUTTON-SELECT(E);ABS(HR0370),-,-,M959-D,D/GRAY	1	
C 13	DE64-10127F	KNOB-COVER;ABS(HR0370D),-,CE959GT-D	1	
C 14	DE66-20182G	BUTTON-START;ABS(HR0370D),-,-,DE959GT-D,DARK-GRAY	1	
C 15	DE71-60378A	COVER-LAMP;POM,T2,W19.4,L27,3G,NTR,RE-446	1	
C 16	DE94-00021A	ASSY CONTROL-PANEL;-,CE959GT-D,DARK-GRAY,AMFO	1	

3-5 Body Latch Parts List

Ref. No.	Parts No.	Description/Specification	Q'ty	Remarks
B 1	DE66-40001A	LATCH-BODY;POM(F20-02) 40GR NTR	1	
B 2	3405-000178	SWITCH-MICRO;VP-533A-OF-PS(T85) 250V,15A	2	
B 3	3405-000175	SWITCH-MICRO;VP-531A-OF(T85) 250V,15A,20	1	
B 4	DE66-90001A	LEVER-SWITCH;P.O.M(F20-02) 2 6 NTR 2ND-W	1	

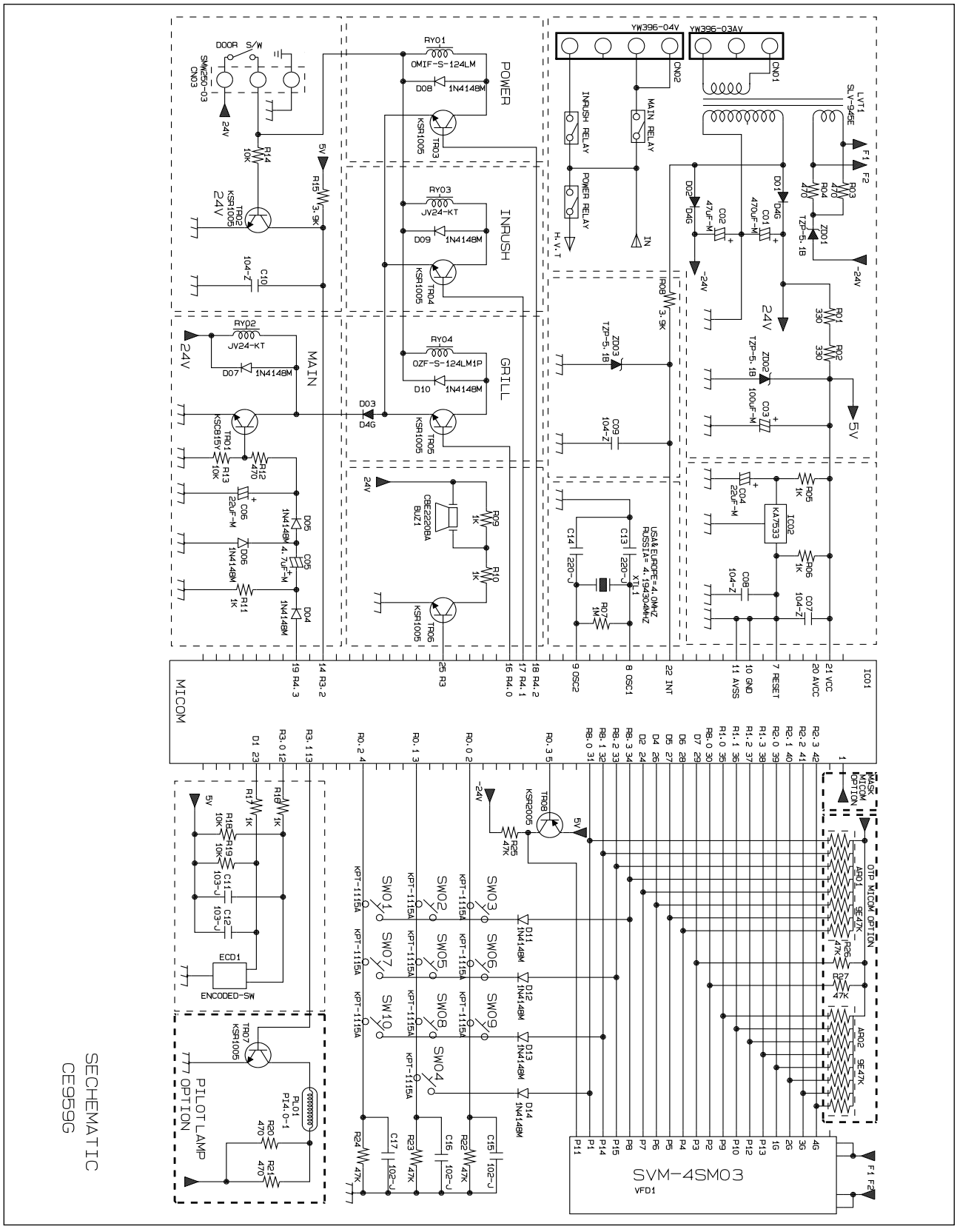
● : Option Parts ⚠ : Warning ⚠ :Electrostatically Sensitive Devices

3-6 Standard Parts List

Parts No.	Description / Specification	Q'ty	Remarks
DE60-10012A	SCREW-TAP TITE;TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	N-F-EA
DE60-10012A	SCREW-TAP TITE;TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	P-C-EA
DE60-10012A	SCREW-TAP TITE;TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	S-M-EA
DE60-10013A	SCREW-ASSY TAP;TH,2S,4,L12,MSWR3,ZPC3,FIBER	1	MO/FAN
DE60-10018A	SCREW-ASSY MACHINE;PH,M4X0.7P,8,MSWR10,SN1,WS	2	B/EATH
DE60-10024A	SCREW-PH;PH,+,M4,L8,MSWR10,ZPC3	2	B/HEAT
DE60-10045A	SCREW-TAP PH;PH,M3,L6,FEFZY	2	MG-TCO
DE60-10069A	SCREW-TAP TH;TH,M4,L10,FRFZY	3	B/UPPE
DE60-10069A	SCREW-TAP TH;TH,M4,L10,FRFZY	1	CV/AIR
DE60-10072A	SCREW-TAP TH;TH,M4,L16,FEFZY,2-SLOT	1	CB-CMP
DE60-10080A	SCREW-WASHER;M5,L12,2S	4	MGT
DE60-10080A	SCREW-WASHER;M5,L12,2S	4	TNS-HV
DE60-10082H	SCREW-A;2S-4X12,TOOTHED	2	B-PLTE
DE60-10082H	SCREW-A;2S-4X12,TOOTHED	2	CN-BOX
DE60-10082H	SCREW-A;2S-4X12,TOOTHED	2	LATCH
DE60-10082H	SCREW-A;2S-4X12,TOOTHED	5	PN-OUT
DE60-10098A	SCREW-ASSY TAP TITE;PH,TC,M4X8,SWRCH18A,ZPC2,GLD,W	1	CV-TCO
DE60-10098A	SCREW-ASSY TAP TITE;PH,TC,M4X8,SWRCH18A,ZPC2,GLD,W	2	M/DRIV
DE60-10122A	SCREW-TAP TH;TAP,TH,2-4X8,FE,FN	2	C-CEIL
DE60-20063A	BOLT-FLANGE;M4,10,ZPC3,YEL,MSWR	2	HI-LOW
DE60-20063A	BOLT-FLANGE;M4,10,ZPC3,YEL,MSWR	2	HI-UPP
DE60-10045A	SCREW-TAP PH;PH,M3,L6,FEFZY	1	-
DE60-10066A	SCREW-TAP TH;TH,M4,L8,FEFZY,2-SLOT	2	H/DOOR
DE60-10012A	SCREW-TAP TITE;TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	-
DE60-10098A	SCREW-ASSY TAP TITE;PH,TC,M4X8,SWRCH18A,ZPC2,GLD,W	1	-
DE60-10088A	SCREW-TAP PH;PH,M3,L8,FEFZY,PLAIN	12	CON/PANEL
DE60-10045A	SCREW-TAP PH;PH,M3,L6,FEFZY	1	GR-TCO

4. P.C.B Diagrams

4-1 P.C.B Diagrams

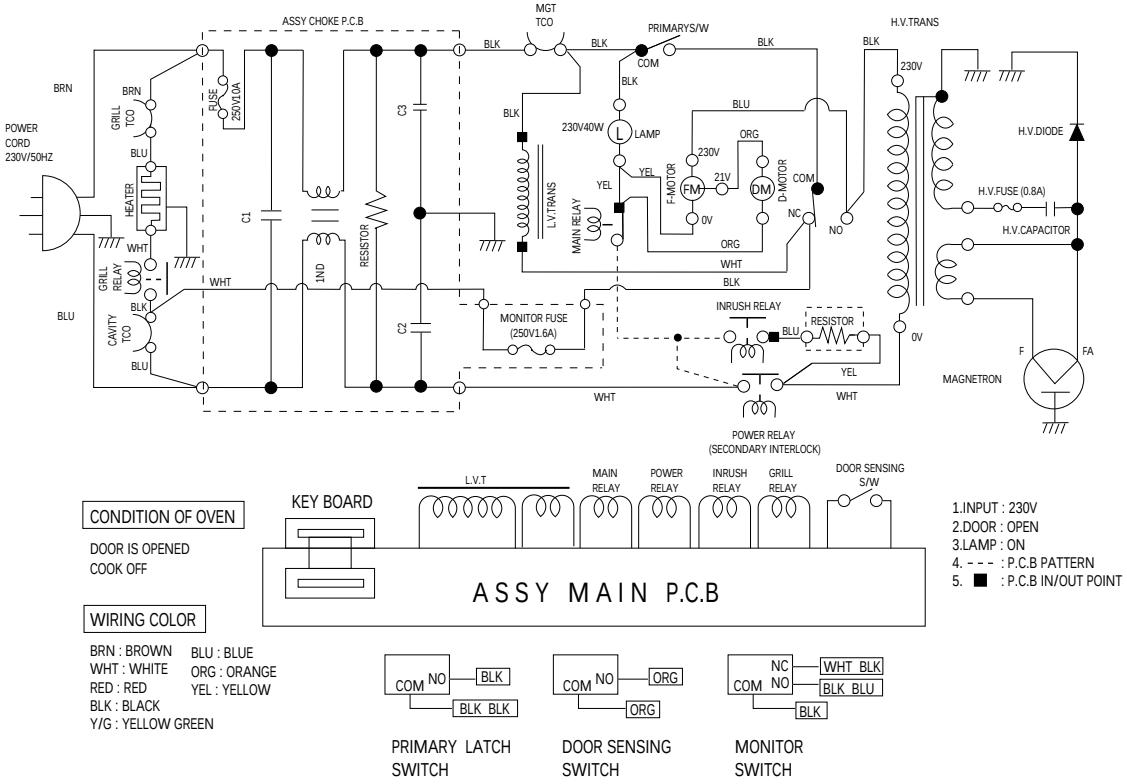


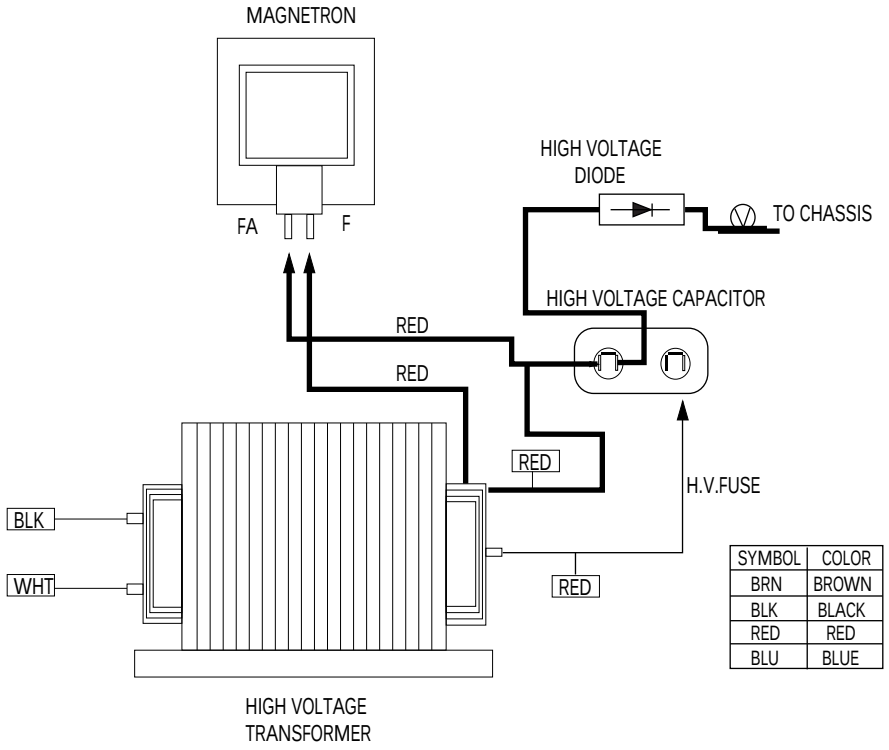
4-2 P.C.B Parts List

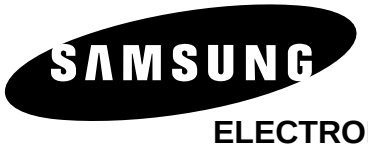
Parts No.	Description / Specification	Q'ty	Remarks
3501-001050	RELAY-MINIATURE;24VDC,200mW,5A,1FormA,10mS,5mS	2	RY02,RY03
3501-001062	RELAY-POWER;24VDC,523.2mW,16A,1FormA,15mS	1	RY01
3501-001068	RELAY-POWER;24Vdc,523mW,16A,1FormA,15mS,10	1	RY04
DE07-10081A	V.F.DISPLAY;SVM-4SM03,GRN/RSHORG,4,51,81.7	1	VFD1
DE09-30725A	IC-MCU;HD404316-D48S,CE959G	1	IC01
DE26-20141A	TRANS-L.V;SLV-945E,230V,50HZ,AC17/2.9V	1	LVT1
DE30-20016A	BUZZER;CBE2220BA,STICK	1	BUZ1
DE39-40723A	WIRE HARNESS;DC35V,C-959G,80mm,12PIN	1	CN05
DE61-90320A	HOLDER-DIGITRON;PP,-,W37,L83.3,-,CE959G	1	-
DE91-20635A	ASSY PCB AUTO-MAIN;230V50Hz,VFD,CE959G	1	-
0401-001002	DIODE-SWITCHING;1N4148M,100V,200mA,500mW,3nS,D	11	D04~D14
0402-001103	DIODE-RECTIFIER;1T4,400V,1A,TS-1,TP	3	D01~D03
0403-000717	DIODE-ZENER;MTZJ5.1B,5.1V,4.94-5.2V,500mW	3	ZD01~ZD03
0501-000388	TR-SMALL SIGNAL;KSC815,NPN,400mW,TO-92,BK,120	1	TR01
0504-001014	TR-DIGITAL;KSR1005,NPN,300mW,4.7K-10K,TO-	5	TR02~TR06
0504-001015	TR-DIGITAL;KSR2005,PNP,300mW,4.7K-10K,TO-	1	TR08
2001-000037	R-CARBON(S);330ohm,5%,1/2W,AA,TP,2.4x6.4mm	2	R01,R02
2001-000290	R-CARBON;10Kohm,5%,1/8W,AA,TP,1.8x3.2mm	4	R13,R14,R18,R19
2001-000429	R-CARBON;1Kohm,5%,1/8W,AA,TP,1.8x3.2mm	7	R05,R06,R09~R11,R16,R17
2001-000435	R-CARBON;1Mohm,5%,1/8W,AA,TP,1.8x3.2mm	1	R07
2001-000613	R-CARBON;3.9Kohm,5%,1/8W,AA,TP,1.8x3.2m	2	R08R15
2001-000780	R-CARBON;470ohm,5%,1/8W,AA,TP,1.8x3.2mm	3	R03,R04,R12
2001-000786	R-CARBON;47Kohm,5%,1/8W,AA,TP,1.8x3.2mm	4	R22~R25
2202-000127	C-CERAMIC,MLC-AXIAL;10nF,+80-20%,25V,Y5V,TP,-,7.5	2	C11,C12
2202-000780	C-CERAMIC,MLC-AXIAL;100nF,+80-20%,50V,Y5V,TP,3.5x1	4	C07~C10
2202-000796	C-CERAMIC,MLC-AXIAL;1nF,10%,50V,Y5P,TP,3.5x19	3	C15~C17
2401-000247	C-AL;100uF,20%,10V,GP,-,6.3x11mm,5m	1	C03
2401-000914	C-AL;22uF,20%,16V,GP,TP,5x11,5	2	C04,C06
2401-001268	C-AL;4.7uF,20%,50V,GP,TP,5x11,5	1	C05
2401-001412	C-AL;470uF,20%,35V,GP,TP,10x16,5	1	C01
2401-001573	C-AL;47uF,20%,50V,GP,TP,6.3x11,2.5	1	C02
2802-000161	RESONATOR-CERAMIC;4MHz,0.5%,TP,10.0x5.0x7.5mm	1	XTL1
3404-000282	SWITCH-TACT;12Vdc,50mA,120+-30gf,6.2x3.6mm	10	SW01~SW10
3711-000203	CONNECTOR-HEADER;1WALL,3P,1R,3.96mm,ANGLE,SN	1	CN01
3711-000240	CONNECTOR-HEADER;1WALL,4P,1R,3.96mm,STRAIGHT,SN	1	CN02
3711-000881	CONNECTOR-HEADER;BOX,3P,1R,2.5mm,STRAIGHT,SN	1	CN03
DE13-20009A	IC;KA7533,DIP	1	IC02 ⚠
DE39-60001A	WIRE-SO COPPER;PI0.6,SN,T,52MM,TAPING_WIRE	14	J01~J03,J05~J15
DE41-10463A	P.C.B-MAIN;FR-1,T1.6,W89,L330,CE959G	1	-
DE60-60012A	PIN-EYELET;ID2.1,OD2.5,L3.0,SN,BSP,T0.25	5	-

5. Schematic Diagrams

5-1 Schematic Diagrams







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